DEATH, DISABILITY, AND DIVERSITY: AN INVESTIGATION OF PHYSICAL IMPAIRMENT AND DIFFERENTIAL MORTUARY TREATMENT IN ANGLO-SAXON ENGLAND

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Death, disability, and diversity: An investigation of physical impairment and differential mortuary treatment in Anglo-Saxon England

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Abstract

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Keywords: Anglo-Saxon, early medieval, palaeopathology, physical impairment, disability, care, funerary archaeology, Christianity, conversion

Until recently, individuals with physical impairment have been overlooked within the field of archaeology due to the controversy surrounding the topics of disability and care in the past. The current research adds to the growing body of archaeological disability studies with an exploration of physical impairment and the possibility of disability-related care in Anglo-Saxon England (5th-11th centuries AD), utilising palaeopathological, funerary, and documentary analyses.

Palaeopathological analysis of 86 individuals with physical impairment from 19 Anglo-Saxon cemetery populations (nine early, five middle, and five later) was performed, and the possibility of disability-related care was explored for several individuals. The mortuary treatment data (e.g. grave orientation, body position, grave good inclusion) was gathered for the entire burial population at each site (N=3,646), and the funerary treatment of the individuals with and without physical impairment was compared statistically and qualitatively, both within and between the Anglo-Saxon periods.

No obvious mortuary differentiation of individuals with physical impairment was observed, although several patterns were noted. In three early Anglo-Saxon cemeteries, spatial association between individuals with physical impairment, non-adults, and females was observed. Early Anglo-Saxon individuals with physical impairment were more frequently buried in marginal locations, and two such individuals were buried in isolation. In the middle and later Anglo-Saxon periods, the funerary treatment of individuals with physical impairment became less variable, they were less frequently buried in marginal locations, and at three middle Anglo-Saxon cemeteries, they were buried in association with socially significant features in the cemetery landscape. The provision of care to ensure survival was not necessary for a majority of the individuals with physical

impairment, but several individuals (lower limb paralysis, mental impairment) may have received regular, long-term care.

This research proposes that the decreasing variability of mortuary treatment of individuals with physical impairment observed throughout the Anglo-Saxon period suggests that more variable attitudes about disability existed both within and between early Anglo-Saxon communities, while the political, social, and religious unification starting in the middle Anglo-Saxon period may have led to the development of more standardised perceptions of disability in later Anglo-Saxon England.

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Abbreviations

The abbreviations which are utilised in this research are provided in the following two tables. The first table presents the site code abbreviations for the 19 sites analysed, and the second table provides the abbreviations utilised in this research for commonly used demographic, anatomical, archaeological, and palaeopathological terms.

Site	Site code
Early Anglo-Saxon	
Apple Down	AD
Butler's Field	BF
Edix Hill	EH
Finglesham	FS
Norton East Mill	NEM
St. Anne's Hill	SAH
Watchfield	WF
Windmill Hill	WMH
Worthy Park	WP
Middle Anglo-Saxon	
Bevis's Grave	BGR
Bishopsmill School	BMS
Burwell	BW
Staunch Meadow	SM
Water Lane	WL
Later Anglo-Saxon	
Black Gate	BLG
Elstow Abbey	EA
Priory Orchard	PO
Raunds	RD
St. Peter's Church	SPC

Term	Abbreviation
Absent	A
Adolescent	ADO
Aneurysmal bone cyst	ABC
Ankylosing spondylitis	AS
Auricular surface	AS
Brachial plexus palsy	BPP
Centimetre	cm
Century	C
Cerebral palsy	CP
Cerebrovascular accident	CVA
Cervical	C
Continued	cont'd
Cranial sutures	CS
Dental attrition	DA
Diaphyseal length	DL
Distal interphalangeal	DIP
Duchenne muscular dystrophy	DMD
Early	E
Early Anglo-Saxon	EAS
East	E
Epiphyseal fusion	EF
External auditory meatus	EAM
Female	F
Femoral neck angle	FNA
Foetus	FE
Giant cholesterol cyst	GCC
Hair-on-end	HOE
Hypertrophic osteoarthropathy	HOA
Individual	Ind.
Infant	IN
Inferior zygapophyseal joint	IZJ
Langerhans cell histiocytosis	LCH
Late	L
Later Anglo-Saxon	LAS
Left	L
Lumbar	L
Male	M
Metacarpal	MC
Metacarpophalangeal	MCP
Metatarsal	MT
Metatarsophalangeal	MTP
Middle	M
Middle adult	MA
Middle Anglo-Saxon	MAS

Term	Abbreviation
Millimetre	mm
Minimum number of individuals	MNI
Monomelic amyotrophy	MMA
Month	m
North	N
Northeast	NE
Northwest	NW
Not available	N/A
Number	no.
Oculo-auriculo-vertebral spectrum	OAVS
Older adult	OA
Older child	OC
Osteoarthritis	OA
Other	O
Pelvis	P
Periosteal new bone	PNB
Possible female	F??
Possible male	M??
Present	P
Probable female	F?
Probable male	M?
Proximal interphalangeal	PIP
Psoriatic arthritis	PsA
Pubic symphysis	PS
Right	R
Rheumatoid arthritis	RA
Sacral	S
Sacroiliac joint	SIJ
Skull	S
Slipped capital femoral epiphysis	SCFE
South	S
Southeast	SE
Southwest	SW
Sternal rib ends	SR
Superior zygapophyseal joint	SZJ
Temporo-mandibular joint	TMJ
Thoracic	T
Tuberculosis	TB
Unaged	UA
Unsexed	US
Week	w
West	W
Young adult	YA
Younger child	YC

Chapter 1- Introduction

1.1 Research context

The existence of cultural variation between distinct human societies is a universally accepted fact: a community, big or small, can develop its own unique identity, which is defined by, among many things, how its members interact with each other and with their surroundings (Cohen 1993; Lawler 2003). Many aspects of culture differ widely between communities (beliefs, morals, values, laws, customs, etc.) (Adler 1993), and these variations result in the distinct societies identified in the archaeological record today. Yet there are two features of life which universally affect all human communities regardless of their cultural differences: physical impairment and resulting disability. Physical impairment, usually the result of a disease, medical condition, or traumatic injury, is a somatic change that causes physical deviation from the average human bodily form. Disability, the social construct that commonly accompanies physical impairment, arises due to restrictive or limiting interactions between an individual with physical impairment and their social and environmental surroundings (Section 2.2).

Yet despite the ubiquity of physical impairment and disability throughout time and place, and the extent to which they can affect an individual's life experience, these concepts have, until recently, remained mostly absent from archaeological studies (Cross 2007; Byrnes and Muller 2017b). This absence stemmed from the complexities associated with determining what a past society might have considered disabling, and from the challenges accompanying the quantification of physical impairment in archaeological human remains (Byrnes and Muller 2017b). Archaeological work has begun to embrace the exploration of identity, particularly the identities of social groups who tend to be overlooked or marginalised in the field, with an emphasis on the archaeology of gender, feminism, and sexuality (e.g. Hays-Gilpin and Whitley 1998; Gilchrist 1999; Joyce 2007; Voss 2007), childhood (e.g. Kamp and College 2005; Sofaer 2007; Crawford et al. 2018), ethnicity and class (e.g. Jones 1997; Lucy 2005), and now, disability. Many of these studies utilise funerary archaeological data to investigate socially marginalised groups in archaeological populations, but burial treatment is not always directly reflective of social, ethnic, age, and gender constructs, or of the treatment of individuals during life (Section 3.1.2).

In order to address the issues which originally made archaeologists reluctant to approach disability as a topic, Tilley (2012; 2015b) identified that a reliance on modern, clinical literature was essential for analysing physical impairment in past populations, and consideration of artefactual, archaeological, environmental, and documentary evidence was imperative for the appropriate contextualisation of disability in past societies. This bioarchaeological approach helps reveal to contemporary society that the challenges faced today by individuals with physical impairment are certainly not modern constructs (Cross 2007). This realisation can foster a connection to and ownership of the past for modern day individuals with disabilities, who, in many cases, may still experience social exclusion (Cross 2007), and emphasises the persistent nature of disability across temporally and geographically distinct spaces. If physical impairment and resulting disability were common features of life in the past, it is only natural that they continue to feature in life today. Bioarchaeological studies which address this fact and explore the life experiences of archaeological individuals with physical impairment can therefore endeavour to encourage a more accepting attitude towards those who experience disability today. Finally, archaeological disability studies are vital, in that they more comprehensively investigate life experience in the past. These studies highlight not just the life experiences of the majority, but of the people who had to adapt to their differences and adjust to the physical, mental, or social consequences.

The introduction of the bioarchaeological approach to the study of physical impairment and disability primarily encouraged case-study investigations of various archaeological cultures from temporally and geographically distinct areas, although population-wide studies are becoming more regular (e.g. Marsteller et al. 2011; Oxenham et al. 2011; Tilley and Oxenham 2011; Roca et al. 2012; Craig and Craig 2013; Dongoske et al. 2015; van Duijvenbode et al. 2015; Boutin 2016; Lovell 2016; Thorpe 2016; Byrnes and Muller 2017a; Castells Navarro et al. 2017; Tilley and Schrenk 2017; Vlok et al. 2017; Tornberg and Jacobsson 2018; Zink et al. 2019). The research presented in this thesis endeavours to utilise this bioarchaeological approach to investigate physical impairment and disability in a broader, more comprehensive archaeological context by exploring the changes in the funerary treatment of individuals with physical impairment in Anglo-Saxon England from the 5th to 11th centuries AD.

1.1.1 Anglo-Saxon England

The Anglo-Saxon period (5th to 11th centuries AD) was chosen as the focus of this research for two main reasons. First, this period of English history is traditionally divided into three different phases, which are characterised by different belief systems (the transition from paganism to Christianity) and by distinct styles of mortuary treatment (Lucy 2000; Hadley 2011; Welch 2011). This allows for the investigation of how changing funerary treatment was potentially influenced by perceptions of disability which may, in turn, have been influenced by changing religious beliefs. Second, previous research (with a relatively small sample size) that utilised funerary archaeology to investigate disability in later Anglo-Saxon (LAS) England (9th to 11th centuries) hinted at the complexity of attitudes towards disability in this time period (Crawford 2010; Hadley 2010) (Section 2.4). These conclusions indicated that a more in-depth and comprehensive analysis was required to understand disability in LAS England, and that the early Anglo-Saxon (EAS) (5th to 6th centuries) and middle Anglo-Saxon (MAS) (7th to 8th centuries) periods should be investigated separately to identify if attitudes towards individuals with disability changed in parallel with the ever-fluctuating social, political, and religious landscapes of Anglo-Saxon England.

It is important to note that there is much current debate about the term “Anglo-Saxon”. This term has its origins in the late 8th century, and was used by the people we now refer to as “Anglo-Saxons”, with West Saxon kings referring to themselves as kings of the *Angli Saxones, Angolsaxones, and Anglosaxones*, most likely in attempts to encourage cultural cohesion (Reynolds 1985). While this term has a historically justifiable use, in some areas, “Anglo-Saxon” began to be used to indicate a racial identity, particularly during the British and American periods of expansion and colonisation (Rambaran-Olm 2019). More recently, the term has been adopted by the Euro-American white supremacist movement to mean “whiteness”, conveniently avoiding the fact the Anglo-Saxons were immigrants (Rambaran-Olm 2019).

Despite this blatant misuse of the term and recent calls for its abandonment, in a recent statement, Hines (2020: 1) and dozens of prominent co-signatories with ties to Anglo-Saxon studies have called for the continuation of this term’s responsible use to signify “a readily identifiable although fluid

cultural complex with open borders, and not a unitary linguistic, territorial, or political field" that dominated south-eastern Britain beginning in the 5th century. These scholars argue that to abandon this term due to its misappropriation by specific groups would lead to more divisiveness between academia and the general public (Hines 2020). Instead, it is important to use this term academically and responsibly in order to counteract political extremism and to educate the public about a period of history that has had an undeniable influence on the development of England as we know it today. Thus, in accordance with Hines (2020), the use of the term "Anglo-Saxon" in this research is used to represent a time period of English history (5th to 11th centuries), not to represent a certain ethnicity.

1.2 Aims of research

This research has several aims:

1) to investigate the funerary treatment of individuals with disability in Anglo-Saxon England,
2) to explore if, when, and why mortuary treatment of individuals with disability and subsequent inferred attitudes about disability changed throughout the Anglo-Saxon period and,
3) to consider the possibility of disability-related care in Anglo-Saxon England.

In order to achieve these aims, several objectives, which are described in brief below, were identified:

1) Establish an appropriate sample population.
    - Consider sample size, bone preservation, presence of potential physical impairment, and possibility of access to the skeletal remains.
2) Investigate physical impairment and explore possible functional restrictions in the identified burial populations.
    - Utilise palaeopathological analysis and modern clinical literature to perform differential diagnoses and examine functional impacts.

3) Explore the funerary treatment of individuals with physical impairment within each time period.
    - Gather funerary data to establish normative burial treatment, interpret results, and infer opinions about disability in each community.
4) Consider the burial treatment of individuals with physical impairment in a wider Anglo-Saxon context.
    - Compare the funerary treatment of the individuals with physical impairment between the EAS, MAS, and LAS periods, identify patterns and trends, and interpret these with reference to contemporary documentary evidence (MAS and LAS periods) and other relevant research.

1.3 Structure of thesis

This thesis has been structured to provide the reader with a clear and coherent journey through the presented research. Chapter 2 introduces the theoretical concepts of disability, defines “physical impairment” and “disability”, explains the culturally and individually specific experience of disability, and illustrates how palaeopathological analysis can benefit from including an investigation of disability. Chapter 2 also presents previous research performed regarding disability in LAS England and, because disability is culturally variable, explores Anglo-Saxon literature to understand what diseases or conditions might have been considered disabling during this period.

Chapter 3 begins with a discussion of the implicit challenges and theoretical approaches associated with the retrospective analysis of funerary data. In addition, Chapter 3 outlines the general funerary treatment observed archaeologically in the EAS, MAS, and LAS periods, with specific focus on normative versus non-normative or atypical burial rites.

Chapter 4 outlines the methods utilised in this research: how a project plan was established, how sites were determined to be appropriate, how macroscopic osteological and palaeopathological analyses were performed, and how funerary data was gathered. Chapter 5 summarises the 19 Anglo-Saxon cemetery

populations which were included in this research to provide appropriate and contextualised background information for each site.

Chapter 6 presents the statistical and qualitative comparisons between the current and previous researchers' osteological analyses for each site, which were utilised to determine if the site was appropriate to include in this research. Chapter 6 also presents the demographic data for each site and time period. Appendix 1 includes more detailed demographic data for each site and describes how the current and previous researchers' data were adapted for statistical analysis.

Chapters 7 through 9 each present the same data but are separated by time period (EAS, MAS, and LAS) and are organised by site. For each site, the following is included: 1) the general funerary treatment observed, 2) descriptions and photographs of the pathological alterations, the differential diagnoses, and the potential functional impacts for each individual with physical impairment, 3) descriptions of the funerary treatment of the individuals with physical impairment, and 4) associated interpretations of their funerary treatment (and inferred treatment during life), which have been informed by contemporary documentary evidence (where possible) and previous relevant research. Appendix 2 includes comparisons of funerary treatment between age and sex groups for each site. Appendix 3 includes more detailed pathological descriptions, photographs, differential diagnoses, and potential functional impacts which could not be included in the main text.

Chapter 10 outlines the limitations associated with this bioarchaeological study of disability. With these limitations considered, Chapter 10 investigates the probability of received care for specific individuals. The interpretations of the funerary treatment of the individuals with physical impairment (and the inferred treatment during life) from each time period are summarised in Chapter 10, and are considered with reference to Anglo-Saxon literature and previous relevant research. Finally, the patterns and trends identified are compared between the EAS, MAS, and LAS periods, and potential reasons for changing attitudes about disability are explored.

Chapter 11 provides an overall summary of what this research has revealed with regards to the funerary treatment of and attitudes towards

individuals with physical impairment or disability in Anglo-Saxon England. It also comments on the logic and effectiveness of the procedural method followed in this research for the investigation of disability in a particular geographical area over a wide-ranging time period, and discusses the real-world relevance of this research.

Chapter 2- Disability in archaeology

Injury, disease, and chronic illness are unavoidable aspects of human life, and can affect the way an individual interacts functionally or socially with the world around them. Yet despite the ubiquity of injury, disease, and chronic illness throughout geographically and temporally distinctive human societies, there was an overall reluctance by bioarchaeologists to address the sociocultural impacts that these conditions might have had on past populations (Southwell-Wright 2013; Byrnes and Muller 2017b). However, the bioarchaeological study of disability is now a growing field of research, and the interdisciplinary combination of palaeopathological analysis and funerary archaeology is more frequently being applied in archaeological studies to investigate the functional and social impacts of physical impairment and disability in past populations. In order to allow for an integration of the scientific and clinical aspects of bioarchaeology and the sociocultural and individualistic facets of disability, discussion of theoretical disability frameworks and terminology are essential.

This chapter will consider the theoretical constructs most commonly applied in disability studies and discuss the relationship between “physical impairment” and “disability”. The value of including an investigation of disability in bioarchaeological studies will be discussed with appropriate reference to the limits that inevitably accompany this methodological framework. Finally, the contemporary perceptions of physical impairment and disability and the possibility of medical care in MAS and LAS England will be explored through documentary evidence. This will help to establish what social or functional impacts might have been considered disabling in this time period, which will directly inform the palaeopathological identification of individuals for inclusion in this research.

2.1 Theoretical models of disability

The theoretical frameworks that are commonly utilised in disability studies must be briefly discussed, as these different approaches have influenced the development of bioarchaeological disability studies, and their application can result in vastly different conclusions. Approaches to disability studies generally follow one of two models: the medical model and the social model. The medical

model of disability originated in the Industrial Revolution, a period during which utilitarian and social evolutionary ideologies were conceived, the use of statistics was on the rise, the nature of work was changing (Barnes 2012; Davis 2013), new ideas about what constituted normalcy and dependency were emerging (Gleeson 1999: 125), and the medical field was being standardised (Byrnes and Muller 2017b). The medical model identifies physical or mental impairments as problematic abnormalities of the body that require medical intervention, a cure, or rehabilitation (Cross 2007; Shakespeare 2013). This model defines an impairment as the cause of disability and gives rise to studies that estimate the frequency of disability or rank the severity of disability based on the nature of the physical impairment (Shakespeare 2013; Byrnes and Muller 2017b).

In contrast, the social model considers disability to be external to the individual: it is society that is disabling the individual, not their physical impairment (Oliver 1990: 22; 1996: 22). The social model emphasises the difference between physical impairment (a somatic condition) and disability (a social construct) (Section 2.2), establishes disabled people as an oppressed group, and focuses on the need for the removal of barriers by social organisations (Oliver 1996: 32).

While the social model has been enormously advantageous for people with impairment or disability around the world by instigating changes in laws against discrimination and the installation of disability-friendly infrastructure (Shakespeare 2013), this theoretical framework has been critiqued as well. The focus on society as the cause of disability rather than an individual's physical impairment has led some to argue that this theoretical framework downplays the effects that a physical impairment can have on an individual (Shakespeare 2013). Some argue that the social model proposes that medical intervention or rehabilitation is *always* unnecessary for an individual who is physically impaired, and that instead, society should change to accommodate them (Anastasiou and Kauffman 2013). The idea of a barrier-free society, while ideal, is not realistic, and this approach ignores that some individuals have impairments which simply cannot be accommodated for in their specific social or physical environment (Shakespeare 2013).

It is therefore necessary that disability studies acknowledge both the social and medical elements of disability (Anastasiou and Kauffman 2013): a physical impairment should not be considered something that must be cured, nor should

society be fully blamed for the potential resultant disablement caused by a physical impairment. This is particularly pertinent to bioarchaeological studies of disability. Because such studies stem from osteological and palaeopathological data, there is a tendency for researchers to echo sentiments of the medical model by removing individuals from their cultural contexts (Cross 2007; Southwell-Wright 2013) and assuming that a skeletal alteration must necessarily have been disabling. The theoretical approach adopted in this research was an amalgamation of the medical and social models of disability. Palaeopathological analysis of skeletal alterations aided in the identification of potential physical impairments, and clinical and medical literature was referenced to assess the functional impacts of such impairments. However, it is acknowledged here that the effect of these physical impairments on individuals in Anglo-Saxon England would absolutely depend on their interactions with their social and physical surroundings. Political, social, religious, attitudinal, environmental, occupational, and personal factors may have acted as barriers to Anglo-Saxon individuals with physical impairment, and thus rendered them disabled (keeping in mind that the modern construct of disability and its associated terminology and labels would not have been present in Anglo-Saxon society). Therefore, while this research originates with medical data, the social aspects of disability are also considered (Section 2.4).

2.2 Terminology

The social model of disability as described in Section 2.1 introduced the differences between “physical impairment” and “disability”. In a field that is rife with various terms, categorisations, and labels, many of them with negative, stigmatising connotations (Zola 1993), the definitions of “physical impairment” and “disability” are of the utmost importance in any study addressing these concepts in archaeological populations (Metzler 2011). The definitions of physical impairment and disability have changed over the years and probably will continue to do so (Table 2.1).

Table 2.1- Summary of some commonly cited definitions of impairment and disability.

Source	Definition of impairment	Definition of disability
Union of the Physically Impaired Against Segregation (Anon 1976: 20)	"…lacking part of or all of a limb, or having a defective limb, organ or mechanism of the body".	"…the disadvantage or restriction of activity caused by contemporary social organisation which takes no or little account of people who have physical impairments and thus excludes them from participation in the mainstream of social activities".
United Nations (Anon 1983: 20)	"Any loss or abnormality of psychological, physiological, or anatomical structure or function".	"Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being".
World Health Organization (Anon 2001: 221)	"…a loss or abnormality in body structure or physiological function (including mental functions). Abnormality here is used strictly to refer to a significant variation from established statistical norms".	"…an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (personal and environmental factors)".
Convention on the rights of persons with disabilities, United Nations (Anon 2006: 1).	-	"…disability is an evolving concept and… results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others".

In general, an impairment is understood as the result of physical, somatic differences that deviate from the normal, average human body, while disability is a social construct that arises due to restrictive or limiting interactions between an individual with impairment and their social, environmental, and personal surroundings (Metzler 2011). For example, an individual with a congenital condition that causes paraplegia of the lower limbs can be considered physically impaired: their legs do not function in the same way as a large majority of the human population. However, whether they are disabled depends on social and environmental factors. If they live in a society which accommodates completely for individuals who use wheelchairs (accessibility ramps, lifts in all buildings, etc.), then this individual may not be significantly impacted socially or functionally by their impairment, and therefore would not be disabled in all situations. Woll and Ladd (2003) discuss deaf communities around the world and report that in some

communities (e.g. 19th century Martha's Vineyard community on an island off of Massachusetts, Hausa society in Nigeria), deaf people are socially well-integrated into society, and both hearing and deaf people can communicate with each other in their own versions of sign language. In these communities, deafness may not be disabling since it does not significantly impact the lives of those living with deafness, while deafness in many other communities, particularly ones without universal access to hearing aids, usually causes disability.

A recent line of research has proposed the utilisation of a new term, "dis/ability", which emphasises the binary nature of disability and ability: to argue that what is considered a disability is culturally mediated inherently implies that what is *not* considered a disability is *also* culturally mediated (Greenstein 2013: 55; Goodley 2014: 58; Waldschmidt 2018). While in most societies, people are more inclined to define "disability" rather than "normal" or "ability", in reality, these terms cannot exist without one another: they are co-reliant (Goodley 2014: xiii). Therefore, disability in a specific culture can be better understood when the culturally construed concept of *ability* is also considered.

For this research, the term "physical impairment" refers to the fact that the individual in question had some skeletal alteration that may have changed, limited, or prevented full physical functionality of a limb or the body as a whole. The term "disability" refers to the potential restrictions on activities and participation that resulted from the interaction between an Anglo-Saxon individual with a physical impairment and their specific social and environmental surroundings (Section 2.4). The current author decided to use the term "disability" rather than "dis/ability". It is acknowledged here that, if disability is a socially meditated construct, then naturally, ability, or normativity, is also socially meditated. Anglo-Saxon social perceptions of disability were investigated in this research to appropriately contextualise the individuals under study, but this was only possible for the LAS period (Section 2.4). The scarcity of literature meant that the socially constructed Anglo-Saxon dis/ability binary could not be fully explored. In addition, because palaeopathological studies tend to use the term "disability" (but see Ingleman 2017; Zakrzewski et al. 2017), the term "disability" was utilised for the remainder of this research.

2.3 Disability in palaeopathological studies

If the medical and social elements of disability are appropriately acknowledged, and historical and cultural contexts are addressed, palaeopathological studies can be of immense value to the investigation of physical impairment and disability in past populations (e.g. Marsteller et al. 2011; Oxenham et al. 2011; Tilley and Oxenham 2011; Roca et al. 2012; Tilley 2012; Craig and Craig 2013; van Duijvenbode et al. 2015; Binder et al. 2016; Boutin 2016; Lovell 2016; Thorpe 2016; Byrnes and Muller 2017a; Castells Navarro et al. 2017; Tilley and Schrenk 2017; Vlok et al. 2017; Tornberg and Jacobsson 2018). The analysis of dry bone to identify alterations or abnormalities can bring researchers as close as is feasible to the lived experience of individuals with physical impairment. Therefore, palaeopathological analysis, in combination with funerary and historical investigation, should be the primary method by which researchers explore disability in archaeological individuals who can no longer speak for themselves. Despite the value of palaeopathological, funerary, and historical analyses in archaeological disability studies, several limitations must be acknowledged.

2.3.1 Palaeopathological analysis

The limitations of a palaeopathological analysis of disability are outlined by Roberts (1999; 2000):

1. Archaeological human remains can be fragmentary and poorly preserved, which can prevent the identification of physical impairment, the diagnosis of the condition, and result in an underestimation of the prevalence of physical impairment and disability in past populations (Section 10.1.1).
2. Not all conditions that were physically impairing or disabling in the past will manifest skeletally, and thus cannot be identified by osteologists (e.g. mental or soft tissue impairment) (Section 10.1.2).
3. Some diseases or conditions resulting in osteological alterations that are very obvious to the palaeopathologist may not have caused physical impairment or disability in life (Section 10.1.3).

Roberts (2000) provides a general overview of the types of conditions or diseases that are both osteologically identifiable and potentially disabling (Table 2.2). This table is certainly not an exhaustive list of all conditions or diseases which can be observed in dry bone, but it identifies some of the conditions that palaeopathologists should look for in an osteological investigation of disability.

Table 2.2- Summary of some osteologically visible, potentially disabling diseases and conditions. Source: Roberts (2000: 48-51, and modified by current author).

Disease/condition category	Examples
Neoplastic disease	Cancer and tumours (osteosarcoma, metastatic carcinoma etc.)
Non-specific	Chronic osteomyelitis Severe chronic non-specific inflammation/infection
Specific infection	Leprosy Tuberculosis Treponemal disease Poliomyelitis
Trauma	Fractures Dislocations Sharp/blunt force trauma
Congenital conditions	Cleft lip and palate Dwarfism (achondroplasia, acromesomelic dysplasia) Osteogenesis imperfecta Cerebral palsy Muscular dystrophies Talipes (clubfoot) Spinal deformities
Metabolic disorders	Rickets Diabetes Paget's disease
Endocrine disease	Pituitary dwarfism Gigantism
Joint disease	Severe osteoarthritis Seronegative spondyloarthropathies (ankylosing spondylitis, rheumatoid arthritis, etc.) Gout Septic arthritis

Despite the inherent limitations associated with a palaeopathological investigation of physical impairment, macroscopic analysis of archaeological bone remains an indispensable tool in the study of disability in past populations, and one of the only methods by which to explore the lived experience of individuals with physical impairment.

2.3.2 Cultural variation

Another limitation to archaeological disability studies is the fact that beliefs about disability in past populations will be different from modern perceptions of disability (Roberts 1999) (Section 10.1.5). As discussed in Section 2.1, disability is a socially constructed concept, and, as cultures vary throughout time and place, the way in which disability is conceptualised in different societies will inevitably vary. In general, several essential aspects tend to influence the construction of disability in a given society: causality and survivability of the disability, socially valued and devalued characteristics, and the ability of an individual with a certain disability to participate in society (Groce and Zola 1993; Groce 1999a). While these factors were identified based on modern ethnographic cross-cultural studies, it is very likely that past populations were also influenced by similar questions and concepts.

Therefore, to appropriately explore disability in past populations, archaeologists must attempt to understand the construction of disability in the culture that they are studying. The perceived causality of physical impairment or chronic illness can affect the way a community treats an individual with such an impairment. If impairment or illness is believed to originate from negative sources (e.g. punishment, sin, witchcraft, inappropriate relationships), then a community's external attitudes may disable an individual with physical impairment (Groce and Zola 1993). However, it is important to note that negative perceptions about the origin of disability do not necessarily result in the social exclusion of an individual with disability. Modern research demonstrates that in many societies, family relationships, participation in society, and socially acceptable behaviour are more important in determining the social status of an individual with disability (Ingstad 1999).

Concepts which are considered of social importance in a particular community can also dictate what alterations or impairments are considered disabling: when physical strength and agility are important, an impairment restricting movement will be disabling, whereas in a community which places importance on sedentary activities (e.g. reading, writing, work at a computer), restricted movement may not be as disabling (Groce 1999a). Similarly, in a society that values an individual's ability to speak and be heard, muteness and deafness could be considered particularly disabling. Therefore, to produce

appropriately contextualised disability research, archaeologists must attempt to determine what sociocultural attributes were essential in a society in order to determine which physical impairments might have been considered disabling.

Unfortunately, archaeologists do not have the luxury of speaking with abled-bodied individuals who can discuss their attitudes about disability, or with individuals with physical impairment who can describe their lived experiences. Therefore, it is necessary to rely on documentary evidence (when available) and archaeological evidence, including but not limited to artwork and symbolism, structural and monumental features, food and diet, objects used in daily life, and artefacts included in burials, to try to understand the construction of disability in a past population. Of course, how archaeological and historical evidence is interpreted by researchers is subjective (Hodder 1997) and, inevitably, conclusions must be drawn based on informed guesses.

In addition, the variability in the construction of disability will not only be influenced by sociocultural factors, but by the personal and intimate experience of disability within a community. A long-standing alteration to a human's body inherently but variably affects the way that individual interacts with themselves, with their environment, and with the people around them (Groce 1999b). A family/community familiar with a certain disease or condition, that is aware of the symptoms and the personal and/or communal consequences, will react differently to disability than a family/community that is unfamiliar with that disease or condition. Therefore, along with recognising the variations between cultures that will affect the construction of disability, it is vital to remember that the actual experience of a physical impairment in just a single individual will affect how they, their family (Ferguson 2002), and their community members conceptualise disability and how their beliefs about disability develop.

Thus, the culturally variable nature of disability is, in a sense, a limitation in archaeological studies of disability: researchers cannot and should not rely on their own socially-biased conceptions of disability, but instead have to utilise fragmentary evidence to draw informed, but subjective, conclusions (Tilley 2015b: 8-10). Although this situation is not ideal, archaeological analysis, as with palaeopathological analysis, is one of the only methods by which we can investigate disability in the past (e.g. Oxenham et al. 2011; Zakrzewski 2014; Tilley 2015a; van Duijvenbode et al. 2015). Therefore, if researchers address the

cultural variability of disability, acknowledge that interpretations of disability in the past are subjective, and place an archaeological population into its appropriate social context, then the use of archaeological data, alongside palaeopathological analysis, can help to reveal concepts of disability and the lived experience of individuals with disability in past societies.

In this research, the culturally specific construction of disability in Anglo-Saxon England was addressed through documentary evidence and funerary data (Section 2.4). Although the biases of literary evidence must be acknowledged (Section 2.4.1), Anglo-Saxon writers provide access to opinions, attitudes, and beliefs that were socially, politically, and religiously relevant at the time, therefore allowing researchers to more reliably explore Anglo-Saxon concepts of disability. Similarly, while the difficulties involved with the interpretation of funerary data also must be addressed, the funerary treatment of individuals with physical impairment allows researchers to make inferences about contemporary attitudes towards disability and impairment (Tilley 2017), always keeping in mind the caveat that the dead do not bury themselves (O'Shea 1984: 10; Parker Pearson 1993) (Sections 3.1.2 and 3.2.6.1).

2.3.3 Individual variation

It has been established that the concept of disability and physical impairment differs between cultures, but what is considered impairing or disabling is also individually specific (Dettwyler 1991; Roberts 1999). Roush (2017) discusses the many factors that can influence an individual's lived experience of disability which are summarised in Table 2.3

Table 2.3- Summary of physical and personal factors that can affect an individual's experience of life with a disability. Source: Roush (2017).

Influencing factor	Description
Disability features	
Time of onset	- Congenital versus acquired - In general, individuals with congenital conditions cope better with their resultant disabilities than those with acquired conditions (Fresher-Samways et al. 2003) - Individuals with congenital conditions are accustomed to differences since birth - An individual who acquires a disability compares their old and new qualities of life and perceives life with a disability as a loss of normal status
Type of onset	- Rapid versus gradual - Rapid: life adjustments are made and stay relatively stable - Gradual: time to prepare for changing lifestyle, but continual readjustments necessary as impairment worsens
Visibility	- Visible versus not visible - A visible disability is obvious to community→ they will be aware of the individual's abilities - A non-visible disability→ may not be visually distinctive, and extent of their abilities is not clear to community
Individual differences	
Occupation	- An occupation can provide financial security, social interactions, and an element of identity - Disability might prevent an individual from partaking in a specific occupation, or an acquired disability might disrupt an individual's ability to continue partaking in an occupation they are accustomed to
Leisure or daily activities	- Leisure or daily activities can provide enjoyment, pleasure, pride, social interactions, and an element of identity - Disability might prevent an individual from partaking in specific leisure or daily activities, or an acquired disability might disrupt an individual's ability to continue partaking in certain leisure or daily activities
Gender, age	- Females and males may respond differently to the same disability - Reaction to a disability will also differ depending on age - Congenital or acquired conditions may affect aspects of an individual's gendered or age-related identity (e.g. participation in certain activities, social concepts of beauty, femininity, masculinity)
Character or personality	- Individual's personality (optimistic, pessimistic, extroverted, introverted, etc.) can affect self-perception and reaction to disability - A person's character or personality may affect the mental health consequences associated with a disability - Personality can also affect interactions with members of society which will influence external perceptions
Intelligence	- Increased or decreased ability to problem-solve will affect the way in which an individual copes with their disability and can affect their need for external support
Spiritual, philosophical ideologies	- Specific beliefs can influence the way an individual comprehends their disability (positive, negative, neutral)

Influencing factor (cont'd)	Description
Family or community support	- How an individual perceives or reacts to their disability will be affected by their access to support from family or community members→ direct support, accommodation of difference (Section 2.3.4.1)
Finances	- State of finances will influence conception of disability→ if a disability prevents financial income, physical impairment will be considered more disabling unless individual does not need to acquire own financial assets (family/community support, hierarchical role, etc.)

Although Roush's (2017) study is based on modern populations, it is highly likely that individuals with physical impairment from past populations dealt with many similar issues. This research demonstrates that even if we can confidently diagnose a condition, assess its functional impact, and explore the social context of the individual, the lived experience of individuals with the same condition can differ. Unfortunately, the extent to which the current research could address this limitation was minimal, as it will be in most archaeological studies. Type and time of onset, and visibility of condition *can* be investigated through palaeopathological analysis and clinical research, but investigating *how* these factors affected a specific individual's experience of disability is speculative. Similarly, gender, age, occupation, religion, economic status, and family support can sometimes be revealed through the analysis of archaeological and palaeopathological data. But again, *how* these factors influenced an individual's comprehension of and response to their disability is speculative. Therefore, when archaeologists assume disability with regards to a specific individual, they must always keep in mind that the medical features of the disability and various personal factors may have affected the way in which an individual perceived and reacted to their own disability.

Despite this limitation, interdisciplinary investigation of disability in archaeological populations utilising palaeopathological, funerary, and historical analysis is the only way by which a group of people who are largely overlooked in archaeological studies (and frequently marginalised in modern society) can be given a voice. The identification of a skeletal alteration consistent with physical impairment makes it *more likely* that an individual was disabled. This osteological data can instigate a contextualised investigation that acknowledges the difficulties of interpreting disability in past populations, but also strives to

understand and describe the lived experience of past individuals with physical impairment and/or disability.

2.3.4 Compassion and care in the past

The introduction of disability studies to the field of archaeology led to debates about whether the survival of individuals with physical impairments could be used to infer care and compassion in the past. Dettwyler (1991) wrote an article that had a massive impact on the study of disability in archaeology. Dettwyler (1991) reviewed three well-known cases of physical impairment from the archaeological record, including Shanidar I (Solecki 1971), Romito 2 (Frayer et al. 1987), and Windover Boy (Dickel and Doran 1989) (Figure 2.1). In all three of these cases, the authors concluded that the individuals were able to survive with severe disabilities due to the compassion, tolerance, or acceptance of their surrounding communities. Dettwyler (1991) rightly argues that the authors utilised palaeopathological analysis to make exaggerated assumptions and to draw conclusions that were too far-reaching. While human skeletal remains can inform researchers about the physical impairments and potential disability of archaeological individuals, conclusions about the morality and compassion of their surrounding community are inappropriate (Dettwyler 1991).

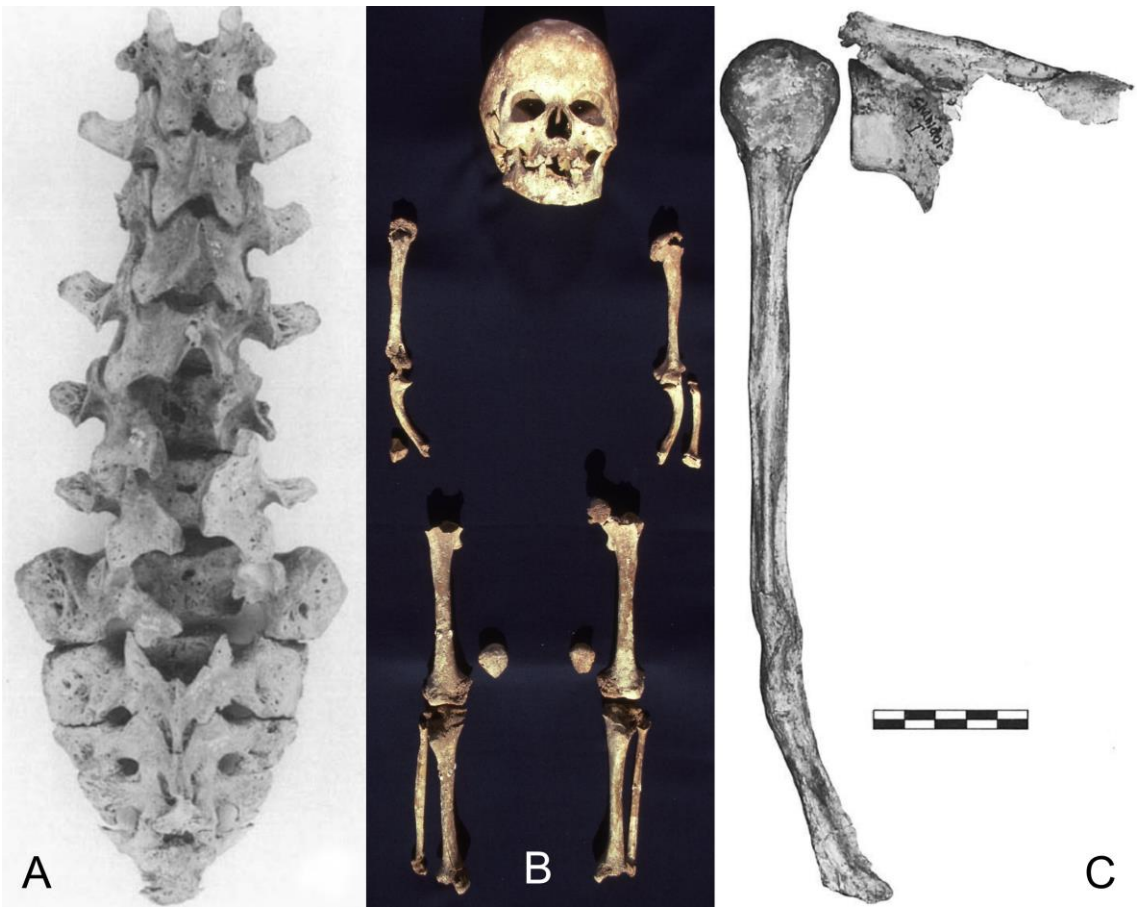

*Figure 2.1- **A:** Possible spina bifida aperta cystica in Windover Boy. Source: Dickel, D. and Doran, G. (1989: 327) Severe neural tube defect syndrome from the Early Archaic of Florida, American Journal of Physical Anthropology, published by John Wiley and Sons © 1989 Alan R. Liss, Inc.; **B:** Acromesomelic dysplasia in Romito 2. © David Frayer; **C:** Atrophy of the right humerus of Shanidar 1. Source: Trinkaus, E. and Zimmerman, M. (1982: 63) Trauma among the Neandertals, American Journal of Physical Anthropology, published by John Wiley and Sons © 1982 Alan R. Liss, Inc.*

Tilley (2015b: 43) accurately describes Dettwyler's (1991) article as having "had a paralysing effect on archaeological research into health-related care". Because Dettwyler (1991) presented such an aggressive stance against the inference of compassion in the past with regards to disability in archaeological populations, there developed an academic avoidance of disability in palaeopathological studies altogether. Challenging Dettwyler's (1991) conclusions, Tilley (2015a) posits that the former author did not take the cultural context of each individual with physical impairment into consideration, and assumed that compassion was the only motivation for caregiving (Tilley 2015b: 44). If palaeopathologists are aware of the issues raised by Dettwyler (1991), particularly the assumption that survival of an individual with physical impairment is proof of compassion within a community, information about the level and types

of care received by individuals with disability in past populations can be investigated.

Metzler (1999) and Murphy (2000) echo this sentiment, and argue that, while some conclusions about whether or not an individual was cared for to ensure their survival can be made through palaeopathological analysis, no interpretations can be drawn about the level of compassion or affection with which they were treated. For example, in the United Kingdom today it is expected that someone with a severe disability will be looked after by a caregiver. While the physical care provided (eating, washing, transportation, etc.) is considered sufficient for survival, the emotional needs of these individuals are often overlooked as the caregivers view their patients as formal clients (Hubert 2000). It is possible that a similar arrangement existed in some past societies, and therefore, while care can be inferred, nothing determinate can be concluded about the *motivation* for this care.

However, Tilley (2015b) is more concerned with *if* and *how* care was administered rather than exactly *why* care was administered. Conservatism in identifying caregiving in the past is absolutely necessary, as individuals can adapt, recover, and learn to live with their disabilities without external aid (Dettwyler 1991; Tilley 2015b). However, Tilley (2015b: 39) accurately stresses that “failure to acknowledge the likelihood of care is ultimately as egregious an error as exaggerating its practice, because both misrepresent the past”. Simply because archaeological disability studies involving the inference of care are difficult and controversial does not necessitate avoidance of the topic, as this would ignore an essential aspect of the lived experience of both individuals with disabilities and the family and/or community members that might have cared for them.

2.3.4.1 The Bioarchaeology of Care

To move academic thought away from the narrow but pervasive view presented by Dettwyler (1991), Tilley (2012) established the Bioarchaeology of Care (BoC), which is an amalgamation of palaeopathological analysis and theoretical archaeological interpretation (Figure 2.2). As Tilley (2015b: 14) notes, most palaeopathological studies have focused primarily on describing and

diagnosing osteological alterations, while avoiding any investigation into *how* those changes may have affected the individual in life. The BoC approach requires the methodical and necessary description and diagnoses of pathological lesions, but, importantly, allows researchers to move past the academic avoidance of archaeological disability by encouraging them to think about the functional and social impacts of the osteological alterations given the cultural context of the individual in question.

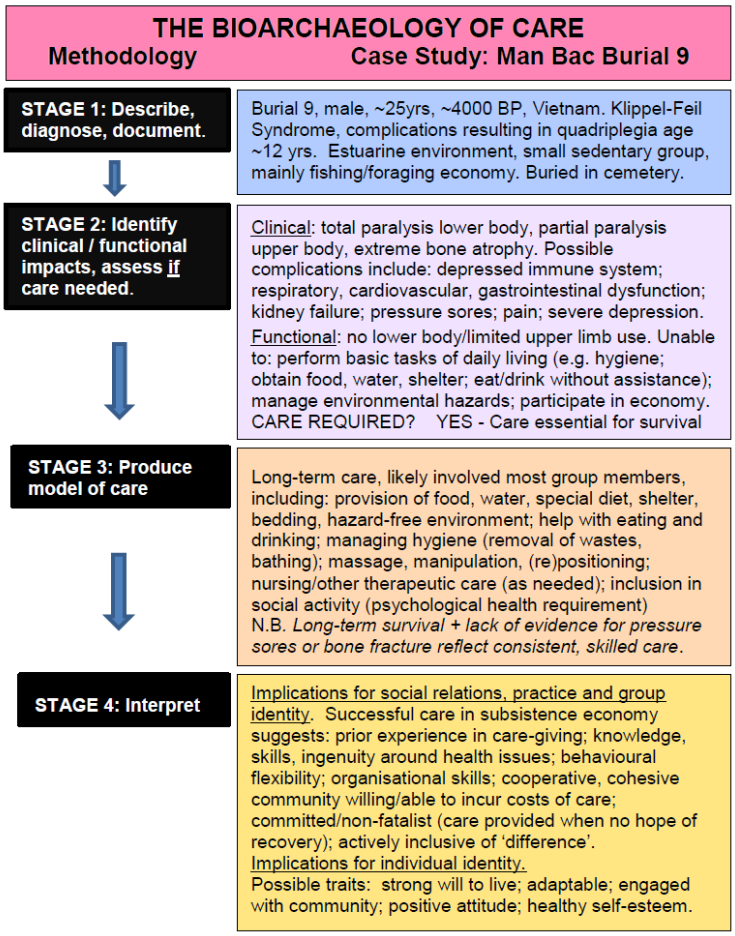

Figure 2.2- The four steps of the Bioarchaeology of Care method using Man Bac 9 as an example. © Lorna Tilley.

Stage 1 of Tilley's (2012) BoC model consists of an osteological analysis of the individual's remains, a record of excavation context, investigation of the mortuary treatment of the individual (e.g. burial location, orientation, body positioning, grave goods), and an examination of the "lifeways context" of the individual, with a focus on the sociocultural, economic, and physical landscapes in which the individual lived (Tilley 2015b: 159).

Stage 2 examines the most likely functional impacts that the observed osteological alterations would have had on an individual utilising modern clinical literature. The researcher must consider how the functional impacts of the pathological alterations would have affected the daily life of the individual, taking into consideration their contemporary environment. The aim of this stage is to determine which style of care the individual would have required to ensure survival (Tilley 2012).

Stage 3 establishes a "model of care". Taking into account the individual's contemporary context, the researcher tries to identify what the required care might have involved, and whether the individual would have required direct support and/or accommodation of difference. Direct support involves care provided directly to the individual with disability (Table 2.4), while accommodation of difference involves the adjustment of family and/or community members in order to accommodate for the individual's difference (Tilley 2015b: 80-4). Examples of accommodation of difference include changing normal activity patterns to provide more resources for individuals who cannot contribute fully, adjusting social roles to allow for participation of an individual with physical impairment, or group adaptation to accommodate for an individual who cannot travel independently (Tilley 2015a; 2015b: 84). The researcher can think about how many people may have been involved in the individual's care, and what tasks those people may have undertaken to ensure their survival (Tilley 2012).

Table 2.4- Components of direct support as described by Tilley (2015b: 81-2), and modified by current author.

Component of direct support	Description
Provision of food and water	- Sustenance and hydration required for survival - Access to resources, a special diet, or assistance with the act of eating or drinking might be required
Maintenance of body temperature	- Assistance with remaining warm or cool might be required → fire, clothing, shelter, etc.
Facilitation of sleep/rest	- Ensuring individual can rest/sleep well→ postural changes, pain relief, etc.
Guarantee of physical safety	- Active hazards→ from humans, reptiles, insects, etc. - Natural hazards→ weather, terrain, etc. - Domestic hazards→ hearths, kilns, wells, etc. - May take a degree of monitoring

Component of direct support (cont'd)	Description
Mobility assistance	- Movement may be required for improvement of disease/condition - Might require physical help with sitting and walking or with daily activities - Might require provision of transport
Monitoring health status	- To allow for recovery and/or survival, health status must be monitored→ determining what individual needs and what care may be required in the future - Medical and psychological situations must be attended to
Maintenance of personal hygiene	- Removal of bodily waste, bathing, wound cleaning, cleaning of surroundings (linens, clothing, etc.) to prevent infection
Physical manipulation	- Repositioning, moving, massaging, etc. may be necessary depending on condition - Paralysis or inability to move will require physical manipulation to prevent occurrence of pressure sores which can be fatal and to maintain normal functioning of digestive and circulatory systems - Maintenance of comfort
Maintenance of physiological functioning	- Need to ensure that all bodily systems (respiratory, circulatory, digestive, metabolic, etc.) are functioning well

The final Stage 4 analyses and interprets Stages 1 through 3. This stage focuses on answering many questions including:

1. What options for care were available to the individual with physical impairment, which ones were actually utilised by the community, and why?
2. Why did the community decide to provide care for the individual with physical impairment and what does this say about the values of this community?
3. What was the typical role for someone of a similar demographic group as the individual with physical impairment, and how did their physical impairment affect their ability to carry out that role?
4. If their ability to fulfil their expected role was compromised, how might they still contribute to their community?
5. What type of personality or coping mechanism may this individual with physical impairment have had to allow them to live successfully within their community?

The BoC method is an effective way to approach disability in the archaeological record, but caution must be exercised in Stage 4. While the funerary treatment of an individual with physical impairment (which is examined in Stage 1 and interpreted in Stage 4) can reveal aspects of the relationship between the community and the individual with physical impairment, and help infer community attitudes about disability, there is an important caveat that must be considered: the funerary treatment of an individual does not necessarily accurately reflect their status, identity, or treatment during life, as it is the living who ultimately decide where and how the deceased is buried (O'Shea 1984: 10; Parker Pearson 1993) (Section 3.1.2). With this bias considered, the analysis of funerary treatment is the primary method by which researchers can examine the treatment in life of archaeological individuals in societies which lack other forms of evidence (e.g. literature, art).

Researchers must also exercise caution when utilising evidence of survival in an individual with physical impairment as an indication that 1) care was *necessary* for their survival (Section 10.2.2), and that 2) care should be considered suggestive of a positive relationship between an individual with physical impairment, their caregivers, and their surrounding community. Just because an individual with disability survived and was potentially cared for does not necessarily mean that they were treated well verbally, physically, or emotionally throughout their life (Dettwyler 1991; Metzler 1999; Wilson et al. 2017). However, in many cases, funerary treatment can provide clues to the nature of the relationship between those burying the individual with physical impairment, (carers, family/community members) and the individual with physical impairment, and therefore treatment in life can be inferred.

Another aspect of Stage 4 involves ascribing personal characteristics to individuals with disabilities in the past, a step which must be approached with a cautious and critical nature. While Tilley (2012: 41) acknowledges that drawing conclusions about an individual's personality hinges on "speculation based on a solid platform of reasoning", it is inappropriate to make assumptions about an individual's mental state based solely on their skeletal remains. Different people react in various ways to somatic conditions (Section 2.3.3), and simply because an individual survived with a physical impairment does not imply that they "had a strong will to live", were "engaged with the community", or had a "positive attitude"

towards life as Tilley (2012: 41) suggests. In Stage 4, there is a tendency to paint all archaeological individuals with disability in a similar colour. By following the protocol set out in Stage 4, it is not possible for researchers to come to any conclusion about an individual's personality that does not include positive and optimistic attributes such as "adaptable", "strong will to live", and "positive attitude" (Tilley 2012: 41). It is unfair and inappropriate to inherently assume that individuals with severe disabilities had such positive personality traits, as making this sort of assumption generalises people with disabilities as a whole, and detracts from their right to individuality. While it is engaging for readers (certainly for those outside the discipline) to learn about archaeological populations on a more personal level, it is vital that those same readers realise that these suggestions about personality are just that: suggestions.

Compassion and care have featured as contentious concepts in archaeological disability studies. The issues associated with assuming that individuals who may have received care were treated with compassion have been addressed, and the BoC method, which was created to allow bioarchaeologists to investigate disability and care in the past in a more contextualised manner, has been described. The scope of this research was too large to apply the BoC method to each individual who was identified as potentially disabled. However, many aspects of the BoC method were applied to each individual (e.g. palaeopathological analysis, investigation of functional impacts, examination of funerary data, and discussion of potential impacts on a contextualised life experience). For individuals where care to ensure survival seemed probable, a more in-depth analysis of possible models of care were investigated as outlined by the BoC method (Section 10.2.2).

2.4 Disability in Anglo-Saxon England

Because of culturally specific conceptions of disability, it was vital to explore what constituted a disability in Anglo-Saxon England. Previous research on disability in the LAS period revealed that individuals with physical impairment could be afforded normative or non-normative funerary treatment, suggesting that perceptions of disability were complex and probably community-specific (Hadley and Buckberry 2005; Crawford 2010; Hadley 2010; Brownlee 2017). In addition, secondary sources that discussed law codes addressing compensatory values

for specific injuries or conditions, and hagiographical and homiletical texts which mention attitudes about physical impairment were consulted in an attempt to establish what physical impairments may or may not have been considered disabling in Anglo-Saxon England (Metzler 2006; Crawford 2010; Hadley 2010; Lee 2011; 2012; 2013). Documentary evidence concerning physical impairment and disability in the EAS period is not available as it probably did not exist. However, MAS and LAS literary sources (7th century onwards) provide contemporary insights into opinions about these two concepts, and can perhaps inform us about long-lasting, entrenched views about disability and physical impairment that may have had roots in the EAS period.

2.4.1 Historical biases

Secondary documentary resources were the primary way by which perceptions of disability in Anglo-Saxon England were addressed in this research. While documentary evidence is invaluable to archaeological disability studies, there are certain issues with the reliance on literary data which must be addressed. Hodder (2012) argues that documentary texts should be treated as any other type of artefact: the significance of the object/text does not rely on what is actually written, but in how it is interpreted by those who wrote it and by those who read it both in the past and the present.

Just as modern-day researchers and writers are biased by current social and political affairs and their own personal opinions, so were writers in the past. Therefore, an ancient author discussing attitudes towards disability might be describing the beliefs of a particular group rather than of the wider population (Southwell-Wright 2013). Beliefs about disability and attitudes towards physical impairment described by ancient authors may also represent the "desirable behaviour rather than… the reality of the afflicted" (Lee 2011: 145). Some contemporary texts discuss the inability of a man with a visible deformity to occupy a position of power (Section 2.4.3), but such texts may not have been well-known or widespread at all levels of Anglo-Saxon society, and the negative attitudes conveyed may not have had a significant impact on the lives of a majority of individuals with physical impairment. Further, in hagiographical texts, individuals with physical impairment are overrepresented, and many cases of healing are described (Lee 2012). These texts were written by authors who probably had

ulterior motives that involved promoting specific saints and emphasising the curative powers of the Church. Therefore, these examples that demonstrate a Christian desire to heal individuals with physical impairment may not have been reflective of reality for most individuals with disability in LAS England. Similar issues accompany the interpretation of law codes. The written law codes dictated by rulers may have had propagandic agendas, perhaps to portray the ruler as merciful, as in the case of Alfred (Treschow 1994), just, or harsh. The extent to which these laws were actually adhered to throughout Anglo-Saxon England is unclear, and it has been proposed that law codes were symbolic rather than practical (Liuzza 2012).

However, even though the Anglo-Saxon texts may provide biased perspectives of attitudes towards disability, their analysis is one of the few methods by which the social construction of disability in this society can be investigated (along with palaeopathological and funerary data). If Anglo-Saxon documentary evidence is approached from a critical perspective, keeping in mind that what was *written* in the past may not be accurately representative of what *happened* in the past, these documentary sources can help reveal the social context of disability in this period.

2.4.2 Law codes

Various MAS and LAS law codes describe specific injuries or afflictions and their associated compensation values. Compensation was calculated with regards to *wergild*, or "man payment", which was the "legal value set to a person's life" and varied between different social classes (Hough 2014: 489). The compensation values provided by the law codes can be used to establish which injuries required the highest compensation, potentially indicating which physical impairments were considered more disabling. Some of Æthelberht's law codes (early 7th century) and Alfred's law codes (revised version of these in the 9th century) which pertain to injuries and compensation are summarised in Table 2.5 and Table 2.6.

Table 2.5- Summary of Æthelberht's law codes. Source: Attenborough (1922: 9-13).

Code no.	Injury	Compensation (shillings)
	General	
34	If a bone is laid bare	3
68	If a sinew is wounded	3
56	For the slightest disfigurement	3
35	If a bone is damaged	4
56	For a greater [disfigurement]	6
62	If a man receives medical treatment	30
63	If a man is severely(?) wounded	30
	Cranium	
36	If the outer covering of the skull is broken	10
37	If both [bones of the skull] are broken	20
44	If the mouth or an eye is disfigured	12
52	If the power of speech is injured	12
40	If an ear is struck off	12
50	He who smashes a chin bone	20
39	If the hearing of either ear is destroyed	25
43	If an eye is knocked out	50
	Torso	
66	If a rib is broken	3
61	If the belly is wounded	12
61.1	If it [belly] be pierced through	20
	Upper limbs	
52.1	If a collar bone is injured	6
53	He who pierces an arm	6
53.1	If an arm is broken	6
54	If a thumb is struck off	20
54.2	…forefinger…	9
54.3	…middle finger…	4
54.4	…ring finger…	6
54.5	…little finger…	11
38	If a shoulder is disabled	30
	Lower limbs	
67	If a thigh is pierced right through	6
65	If a thigh is broken	12
70	If the big toe is struck off	10
71	…second toe…	4.5
71	…third toe…	2
71	…fourth toe…	3
71	…fifth toe…	5.5
69	If a foot is struck off	50
65.1	If he becomes lame [from broken thigh]	Settlement may be left to friends
64	If anyone destroys the generative organ	3x wergild

Table 2.6- Summary of Alfred's law codes. Source: Attenborough (1922: 87-93).

Code no.	Injury	Compensation (shillings)
	General	
76	If the small sinew [of a man] be damaged	6
75	If the large sinew is damaged, and if it can be treated medically	12
75.1	If the man becomes lame as a result of the damage to the sinew, and if he cannot be cured	30
71	If a man's eye is knocked out, or if his hand or foot is struck off	66*
	Cranium	
49.1	If it is a back tooth [that is knocked out]	4
49	If anyone knocks out another's front tooth	8
51.1	If a man's chin-bone is broken in two,	12
49.2	A man's canine tooth [that is knocked out]	15
44	For a wound on the head if the outer bone [only] is pierced	15
50	If anyone strikes another's jaws so violently that they are fractured	15
46	If either ear is struck off	30
44.1	For a wound on the head, if both bones are pierced	30
60	If anyone strikes off another's nose (or mouth?)	60
46.1	If the hearing is stopped, so that he cannot hear	60
47	If anyone knocks out a man's eye[1]	66*
52	If, as the result of another's actions, a man's tongue is torn from his mouth	66*
	Torso	
70	If one man breaks another's rib without breaking the skin	10
51	If a man's throat is pierced	12
70.1	If one man breaks another's rib and the skin is broken and a bone is removed	15
	If he is pierced right through [the belly]	20
61	If a man is wounded in the belly	30
77	If one man damages the tendons in another's neck, and wounds him so severely that he has no control over them, but [if] nevertheless he continues to live so wounded	100[2]
	Upper limbs	
54	If the arm is fractured above the elbow	15
74	If anyone hacks into [the shoulder], and a bone is removed	15
73	If anyone smashes another's shoulder	20
69	If a man maims another's hand outwardly…if he can be cured	20
55	If both bones in the arm are broken	30
53	If a man is wounded in the shoulder, so that the synovia flows out	30
56	If the thumb is struck off	30
57	…first finger…	15
58	…middle finger…	12
59	…third finger…	17
60	…little finger…	9
69	If a man maims another's hand outwardly….and half of it comes off	40
66	If a man's arm, with the hand and all below the elbow, is cut off	80
68	If a man is wounded in the shoulder…if he continues to live	80

Code no. (cont'd)	Injury	Compensation (shillings)
	Lower limbs	
63	If the shin is pierced below the knee	12
64	If the big toe is struck off	20
64.1	…second toe…	15
64.2	…middle toe…	9
64.3	…fourth toe…	6
64.4	…little toe…	5
62	If a man's thigh is pierced	30
62.1	If it [thigh] is [also] fractured	30
63.1	If it [shin] is fractured below the knee	30
67	If the loin be maimed, pierced, or pierced right through	60, 15, 30
65	If a man is so badly wounded in the testicles that he cannot beget children	80
72	If a man's shin is struck off at the knee	80

NB: [1]= If the eye remains in the skull but the individual cannot see, one third of the compensation is withheld; [2]= unless the councillors award him a juster and greater sum; *= + six pence and one third of a penny.

It is readily apparent that the Anglo-Saxons were familiar with a wide range of injuries and impairments. In general, the assigned compensation amount seemed to correspond with how much normal function was affected. For example, different compensatory amounts were assigned for the loss of different fingers and toes under both Æthelberht's and Alfred's law codes. The largest amount of compensation was awarded for the loss of a thumb (as this would decrease functionality of the hand considerably) and the big toe (as this was more likely to affect the ability to ambulate normally). Although the loss of the other fingers and toes were included in the law codes, their compensatory values were not as high, thus mirroring their impact on daily functioning.

The law codes also adjusted the amount of compensation based on the severity of an injury type (Metzler 2006: 106). For example, in both Æthelberht's and Alfred's law codes, if "both bones" (inner and outer table) were perforated in a skull injury, the compensation was twice as much as if only the "outer bone" (outer table) was involved (Attenborough 1922: 87). Alfred also decreed that a pierced shin (soft tissue injury) had a value of 12 shillings, while a fractured shin had a value of 30 shillings. Therefore, the Anglo-Saxons acknowledged that the more severe the injury, the more likely it was to cause physical impairment, and therefore more compensation was appropriate.

It is also clear that the Anglo-Saxons made a legal distinction between an injury that was disfiguring, and one that actually caused functional impairment.

For example, under Æthelberht's law codes, the loss of an ear was valued at 12 shillings, while the loss of hearing was valued over twice that at 25 shillings. Although the loss of an ear would have been noticeable by the community and would have distinguished an individual visually, the loss of hearing was considered a much graver injury. Similarly, although the loss of a tooth cannot be considered physically impairing, it is interesting that under Alfred's law codes, the loss of the front teeth (which are more visible) was given a higher compensatory value than the loss of the molars (which are not visible). Therefore, an injury which caused visible distinctiveness was considered more drastic than an injury which did not.

In Æthelberht's law codes, the injuries requiring the most compensation included loss of hearing, a severe wound, loss of an eye, injured shoulder, loss of a foot, and destruction of the genitals. Under Alfred's revised law codes, the injuries requiring the most compensation were similar (loss of an eye, foot, or hearing, infertility, or an injured shoulder), but high compensatory values were also awarded for the loss of a nose, tongue, hand, or damage to neck tendons which "wounds him so severely that he has no control over them" (Attenborough 1922: 93). The loss of a nose was probably not physically impairing, but would cause a serious facial disfigurement, perhaps suggesting an increased concern with facial injuries causing visual distinctiveness. Evidence of this increased concern is found in an additional law code regarding blindness in an eye: the loss of an eye and blindness was given high compensatory value, but if the eye remained in the skull but was still not functional, one third of the compensation was withheld. Although the functional outcomes of the two separate injuries were the same, less compensation was awarded if a visual deformity (i.e., a missing eye) was avoided.

The highest compensatory value in Alfred's law codes was afforded to an individual whose neck was injured which resulted in the loss of control of the tendons. Is this perhaps a reference to paralysis? The Anglo-Saxons may have made the connection between a neck or spine injury with the "loss of control" (Attenborough 1922: 93) of the tendons and the subsequent loss of control of the limbs, although why this was not explicitly stated is unclear. Perhaps they had observed that different injuries to the neck could cause loss of control in different

areas of the body, and therefore used the word “tendons” so that the law addressed all types of paralysis.

The final law codes which provide insight into what the Anglo-Saxons might have considered physically impairing or disabling are provided in Table 2.7. Alfred 17 confirms the fact that *unmaga* (an individual who is socially or physically weak) (Crawford 2010), who depended on the care of others, existed in this period, while Alfred 14 identifies that individuals who were unable to hear or speak were considered reliant on other individuals for their financial security.

Table 2.7- Alfred’s law codes mentioning reliance on another individual. Source: Attenborough (1922: 71-2).

Law code no.	Description
14	If anyone is born dumb or deaf, so that he can neither deny nor confess his wrongdoings, his father shall pay compensation for his misdeeds.
17	If anyone entrusts a [child or other] helpless person who is dependent on him to another, and the person accepting the charge causes the death of the person committed to him, he who nurtured him shall clear himself of criminal intention, if anyone prefers such an accusation against him.

Injuries which resulted in infertility were awarded very large amounts of compensation (with higher compensation than for death according to Æthelberht 64), and therefore may have been considered severely disabling, suggesting that a man’s ability to procreate was a vital part of Anglo-Saxon manhood and virility. The loss of a foot or hand, and, somewhat surprisingly, an injury to the shoulder were also worth large amounts of compensation, and therefore may have been considered major disabilities. Perhaps a shoulder injury was considered severe as in many cases, this meant that the rest of the limb was also less functional. The fact that an abnormal gait or restricted movement of the arms were considered drastic impairments emphasises the importance of activity, movement, and strength in Anglo-Saxon society. Finally, the injuries which resulted in the inability to hear, see, or speak were also worth large amounts of compensation, indicating that they may have been considered significantly disabling. The normal social responsibilities of an Anglo-Saxon free man required the ability to ride a horse or walk, carry weaponry, see, hear, speak, swear oaths, and declare allegiance (Crawford 2010). Therefore, injuries, diseases, or conditions which prevented these activities (deafness, blindness, muteness,

restricted use of legs/arms) were probably considered disabling in Anglo-Saxon society (Crawford 2010; Lee 2011).

2.4.3 Hagiographical and homiletical sources

While Anglo-Saxon law codes can illuminate what conditions or diseases might have been considered disabling, other religious textual resources, many of which aimed to glorify specific saints or to promote the healing nature of faith, tend to describe physical impairment more positively (Lee 2011; 2012). These texts regard physical impairment as a means by which a clergyman or saint could prove their holiness in the form of a curative miracle (Lee 2011; 2012). For example, in a *History of Croyland Abbey,* Ingulf records the affliction of a large number of people at the council of Kingesbyry in 851 AD with a sudden chill, paralysis, pain, and the withering of limbs (potentially poliomyelitis?), which was cured by the relics of St. Guthlac (Metzler 2006: 107). Similarly, in Bede's *Life of St. Cuthbert*, a paralysed man is cured by stepping into the shoes of a saint (Colgrave 1940: 298-300), and a woman with pain in her head and "the whole of one side" was cured with holy oil and a blessing from the bishop (Colgrave 1940: 117).

In addition, religious texts were also utilised to suggest that disability could improve an individual's piety or to prove their close relationship with God. Although there certainly are literary connections between sin and impairment (e.g. St. Æthelthryth suffered a throat tumour because she loved wearing necklaces when she was young), impairment was often considered a sign that God was testing or chastising those whom he loved most (Lee 2011; 2013). Because the body could only be made perfect by God upon Judgement Day, it followed that no body on Earth could be perfect, and that living with such an imperfection (or impairment) could be considered a symbol of one's faith (Lee 2013).

There are several examples of paralysis in women being considered a blessing rather than a disability. For example, in his homily of the *Feast Day of the Holy Martyrs*, Ælfric states that Romula remains bedridden for years because God punishes those he loves so they might have more time to pray and strengthen their faith, in Ælfric's homily on the *Chair of St. Peter*, St. Peter asks

that his daughter Petronella be paralysed so that she learns to fear God, and in Bede's *Ecclesiastical History*, a nun of noble birth named Tortgyth was paralysed for nine years, but still held a position of power and respect in her community (Sellar 1907; Lee 2012). In addition, in *On Tobias*, Bede describes a blind man named Tobias as "reproved yet also chosen" (Foley and Holder 1999: 61), and in *Ecclesiastical History* he states that Abbess Hilda of Whitby uses her seven-year-long illness and weakness to perfect her virtue (Sellar 1907). In Asser's *Life of King Alfred*, the king's illness, proposed to have been Crohn's disease (Craig 1991), was described as a gift from God given to Alfred after he asked to be tested by an affliction (Keynes and Lapidge 1983: 90). Despite this affliction, Alfred had children, won wars, and enlightened his people, and therefore was not socially disabled by his impairment (Tovey 2010). Thus, it appears that in Christian Anglo-Saxon society, a condition which might be disabling in modern society (or even have required compensation if it was caused by another individual in Anglo-Saxon society), may not have been considered disabling in all contexts. Instead, an individual's ability to live with their disability *and* continue to comport themselves as good Christians was considered a direct reflection of their piety and faith. Whether disability could be perceived as a symbol of strength and fortitude in non-Christian EAS communities is unclear.

It should also be mentioned that Asser describes King Alfred's "invisible" but debilitating disease as a sign of strength rather than weakness, but he also notes that had the king been visibly impaired, he would have been rendered "useless and contemptible" (Kershaw 2001: 206). Anglo-Saxon writers of this time would have been influenced by Christian documents, including *Leviticus XXI,* which dictates that a man with any sort of physical blemish (blind, lame, disfigured, deformed, crippled, hunchback, dwarf, festering sores, damaged testicles, etc.) should not be allowed to present or be near food offered to God to avoid desecration (Biblica no date). Similarly, in *Pastoral Care*, Pope Gregory the Great claimed that a man with physical defects (blind, lame, small/big/crooked nose, broken hand/foot, crookbacked, blear-eyed, continual scab, rupture) was unworthy to hold office (Davis 1950: 40). The connection between visible deformity and uselessness demonstrated by these documentary sources suggests that Anglo-Saxons may have had negative attitudes towards those with visible deformities, although perhaps disfigurement was considered more

damaging for individuals in positions of power as they were visible to more people.

The hierarchical nature of Anglo-Saxon society and the differential levels of work or activity between the different classes would also have affected how physical impairment and disability were perceived. In many modern societies, the categorisation of an individual as disabled relies on their inability to work or financially support themselves (Kaplan 2000), but the same concept may not have applied in Anglo-Saxon society. Labour requirements were dependent on social status, and individuals in Anglo-Saxon society who did not perform manual labour (nobleman, clergymen, etc.) were still financially supported (Lee 2012). Therefore, individuals with physical impairment of noble birth (e.g. Tortgyth), clergy members (e.g. Abbess Hilda), or individuals in positions of power (e.g. King Alfred), may not have been considered disabled, as their expected social and economic roles were not detrimentally affected by their illnesses, which were instead used to affirm their piety and faith (Lee 2012). It is possible that similar conditions or diseases would have been considered disabling if they were experienced by individuals of lower social status in Anglo-Saxon society.

2.4.4 Anglo-Saxon conceptions of impairment and disability

Lee (2013) uses literary and linguistic evidence to investigate the language of disability in Anglo-Saxon England. Lee (2013) argues that although there are numerous Old English terms for concepts associated with our modern understanding of disability, Anglo-Saxons did not have a single term for disability as we understand it today (see Table 2.8). Lee (2013) emphasises that although LAS religious and judicial literary sources do provide examples of impairment being disabling, this was not *always* the case, and in some instances, impairment was considered the preferential state. Lee (2013) rightly points out that many of the sociocultural norms present in Anglo-Saxon society remain hidden to us, and without them, it is difficult to fully appreciate perceptions of disability in this period. Nonetheless, it is clear that there was a distinction between impairment and disability in LAS England, but whether health status served as a method by which to distinguish or categorise people, as is commonly done today, is unclear (Lee 2013).

Both Lee (2012) and Bruce (2014) agree that the Old English term most similar to the modern concept of disability is *unhælu* (adjective= *unhal*). In her thesis on the concept of *unhælu* (un-wholeness) and being *unhal* (un-whole) in LAS England, Bruce (2014: 78) argues that, based on numerous literary examples, *unhælu* was generally viewed in negative terms, and was used to indicate a "physically oppressive state" or non-normativity. However, LAS vocabulary did not clearly distinguish between illness, impairment, and injury, and therefore our modern perceptions of physical impairment and disability should be applied to the LAS period with caution (Bruce 2014). Bruce (2014) proposes that, based on the literary evidence which addresses the medical, judicial, and religious interventions prescribed for *unhal* people, the later Anglo-Saxons considered it important to take steps to counteract *unhælu* in order to encourage a return to normality for the individual and their community. As suggested above, Bruce (2014) agrees that social position would have influenced the effect that *unhælu* had on an individual's life. Being *unhal* could have negative social and economic consequences, which sometimes resulted in stigmatisation, but *unhælu* could also be perceived more positively as means of encouraging Christian charity and healing (Bruce 2014).

Table 2.8- Old English terms associated with physical impairment and disability. Sources: Lee (2013) and Bruce (2014).

Old English term	Modern translation
Adl	Disease, ailment
Bedrida	Bedridden
Brocung	Sickness
coþu	Illness, sickness
Lef	Weak, infirm, ill
Lyftadl	General immobility
Misboren	Born with an impairment
Misweaxende	Growing up with an impairment
Prowing	Painful suffering
Seocness	Sickness
Suht	Sickness
Unhælu	Un-wholeness
unhal	Un-whole, sick, in bad health, infirm
Unmeaht/unmiht	Un-might, weakness, un-ableness
Unstrang	Un-strong
Untrumness/untrymnes	Weakness, illness, infirmity
Unweorcheard	Delicate, weak, infirm

2.4.5 Summary

In summary, MAS and LAS opinions about what constituted a disability and their attitudes towards those with such disabilities varied. These opinions and attitudes were probably dependent on who was passing judgment (e.g. a religious writer, a practicing clergy member, a commoner, a king), and would have been influenced by elements of the identity of the individual with physical impairment, including their social status, gender, age, and occupation. Therefore, it cannot be implicitly assumed that a physical impairment inevitably led to disability in Anglo-Saxon society, as in some cases, physical impairment was considered a blessing. However, these situations were probably few and far between, and the law codes discussing compensation in the event of physical impairment may be more representative of the lives of the regular Anglo-Saxon population. These law codes indicate that a variety of diseases and conditions were familiar to middle and later Anglo-Saxons, and compensatory values for specific injuries suggest that restricted movement or the inability to see, speak, or hear were considered disabling in Anglo-Saxon society. It must be noted that documentary evidence of disability in the EAS period does not exist. The projection of MAS and LAS concepts of disability, which may have been influenced by the conversion to Christianity, onto the EAS period is not ideal. Nonetheless, it seems likely that laws codified in the MAS period (7th century) may represent opinions and attitudes already ubiquitous in the EAS period (Banham and Voth 2015), and these law codes can still aid researchers in the investigation of disability in this period.

2.5 Care in Anglo-Saxon England

In order to apply the BoC method to the individuals for which it could be argued that care was necessary for survival (Sections 10.2.2.9 and 10.2.2.10), an investigation into documentary and osteological evidence suggestive of care in Anglo-Saxon England was required.

2.5.1 Documentary sources

Various Anglo-Saxon textual sources (most commonly cited are *Bald's Leechbook, Leechbook III, Lacnunga, Herbarium of Pseudo-Apuleius, and Medicina de Quadrupedibus*) mention the types of diseases and conditions

encountered in Anglo-Saxon life along with the medicinal, magical, and (more rarely) surgical remedies to treat them (Cameron 1988; 1993; Meaney 2000; Banham and Voth 2015). Table 2.9 summarises some of the documentary evidence of the diseases which were identified by Anglo-Saxon medics as requiring specific regimes of care.

Table 2.9- A selection of literary evidence for diseases/conditions and medical treatments encountered in Anglo-Saxon England. Sources: Cameron (1993), Meaney (2000), Metzler (2006), and Banham and Voth (2015).

Source	Date (AD)	Description and/or examples
Laws of King Æthelberht	*c.*560-616	- "If a man receives medical treatment, 30 shillings shall be paid as compensation" (Attenborough 1922: 13)
Aldhelm of Malmesbury's *Enigmata*	L7th to E8th C	- Medicinal leeches - "Horrible leprosy" (Cameron 1993: 26) - "limbs lurid with wasting and contagion" (Cameron 1993: 25)
Bede's *Ecclesiastical History of the English People*	7th to 8th C	- Dumbness→ cured with speech therapy - Surgery performed on throat tumour (*c.*679) - Paralysis - Battlefield wounds tended (*c.*685)
Life of Wilfrid	*c.*720	- Bandaging for broken limbs
Laws of King Alfred	*c.*871-899	- "If the man becomes lame as a result of the damage to the sinew and if he cannot be cured..." (Attenborough 1922: 93) - "If the large sinew is damaged, and if it can be treated medically so as to make it sound…" (Attenborough 1922: 93)
Alfred's translation of Gregory the Great's *Cura Pastoralis*	*c.*900	- Use of a sharpened knife to perform an operation on a swelling
*Leechbooks (*including *Bald's Leechbook, Leechbook III)*	*c.*900	- Manual/instrumental operations mentioned in eight out of 155 chapters→ includes amputation, cauterisation, lancing, suturing, ligaturing - Much space devoted to ailments of the eyes (mistiness of eyes, dimness of vision, pain, styes, inflammation) and issues with the ears (aches, deafness) - Distinction between paralysis that affects lower limbs, half of the body, and the whole body (Bezzo 2007) - Other conditions mentioned: burns, joint problems, shoulder dislocation, loss of limb, dysentery, liver disease, limb/joint pain, pain in the side, jaundice, ailments of the spleen, digestive problems
Lacnunga	*c.*1000	- Organised by location of the illness/malady - Frequency of disease summarised in Table 2.10

NB: E= early, M= middle, L= late, C= century; It should be noted that because it is beyond the scope of this project to read all the mentioned texts, this table is not a complete collection of all documentary references to conditions or medical treatments in Anglo-Saxon England. Instead, a variety of sources were consulted and some of the examples they provided were included.

Table 2.10- Types of diseases/conditions and their frequencies of citation in *Lacnunga*. Source: Meaney (2000: 230).

Disease/condition	Frequency of citation
Skin diseases	22
Cough or lung disease	20
Eye problems	14
Headache	10
Peor (eruptive skin rash?)	10
Heart problems	9
Diarrhoea	6
Stomach/gut ache	6
Swellings	5
Fever	4
Foot problems	4
Pain in the side	4
Gynaecological problems	4
Sudden illness or “elfshot”	2
“Flying venom” (infectious disease?)	2
Joint pain	2
Pain in the loins	2
Pain in buttocks	1
Weakness of limbs	1
“Wound”	1

NB: disease/conditions less relevant to this research (e.g. loss of a fingernail, nightmare) are excluded.

Unfortunately, the earliest documentary references to medicine in the Anglo-Saxon world come from the 7th century, therefore medical practice in the EAS period (5th to 6th centuries) is still obscure. However, Bantham and Voth (2015) argue that Anglo-Saxon law codes, which mention compensation for specific injuries (Section 2.4.2), were probably codified versions of unwritten laws that already existed. Therefore, the fact that one of the laws of King Æthelberht specifically mentions compensation for the care of an injured individual suggests that medical care, whether provided by a professional or a member of the lay population, probably existed before the late 6th century. In addition, Meaney (1984) argues that due to the types of remedies included and the language used, it is likely that the ideas on which Anglo-Saxon medical texts were based originated from an older source before the time of Alfred. Therefore, medical knowledge and the need for care was probably a feature of Anglo-Saxon daily life before the 7th century.

2.5.2 Osteological sources

Although no Anglo-Saxon medical instruments have been uncovered from archaeological contexts, osteological evidence suggests that medical procedures and the necessary follow-up treatment were practiced in this period (Roberts 2013). Trepanation (scraping away of the bone of the skull until full perforation is achieved), which was probably used to relieve pressure inside the skull, has been identified in 24 EAS and MAS individuals (Roberts 2013). Because all 24 individuals survived this medical procedure (as evidenced by the healing edges of the perforation), follow-up treatment including treating and washing the head wound seems probable (Roberts 2013). Similarly, although osteological evidence of amputation in the Anglo-Saxon period is rare, there are several individuals who survived this procedure (Roberts 2013). This suggests that there were individuals who had the medical knowledge to perform this operation successfully, minimise post-operative infection, and encourage healing. Finally, although there is no direct evidence for the setting of fractured limbs, the fact that many severe fractures appear to have healed in good alignment suggests that methods for bone reduction were known in Anglo-Saxon England (Roberts 2013). Therefore, osteological evidence from Anglo-Saxon skeletal remains, although rare, supports the successful performance of medical procedures and appropriate post-operative care.

In summary, both the documentary and osteological evidence indicate that some form of medical care for injuries and diseases was common in Anglo-Saxon England, including some operative procedures, administering forms of first aid, and prescribing various types of medicine (Banham and Voth 2015). Although an experienced individual probably provided initial medical treatment (i.e., operation, reduction, herbal remedy, salve) (Banham and Voth 2015), it seems likely that the follow-up care during the healing process could also be performed by family members or other non-medical members of the community.

This chapter has discussed various models of disability in the modern world and emphasised the need for archaeologists to utilise aspects of *both* the social and medical models in order to appropriately investigate disability in past populations. The limitations inherently associated with palaeopathological study of disability were addressed, but it was also established that, if these limitations

are considered, interdisciplinary study involving palaeopathological, historical, and funerary analyses can help to synthesise the lived experience of individuals with disability from archaeological contexts. Conceptions of disability in Anglo-Saxon England were addressed, and law codes and religious texts revealed that physical impairments causing restricted movement, and those affecting the main senses (sight, sound, speech) were probably considered disabling in Anglo-Saxon society. Finally, to appropriately contextualise the study of care in Anglo-Saxon England, documentary and osteological evidence was considered to establish the likelihood of medical care in this period. The following chapter will describe funerary rites observed in the EAS, MAS and LAS periods. This will allow for a more comprehensive understanding of what was and was not considered normative burial treatment during these periods so that the mortuary treatment of individuals with physical impairment can be appropriately contextualised.

Chapter 3- Anglo-Saxon burial practices

Anglo-Saxon burial rites have been the subject of much research and debate over the past few centuries. With regards to mortuary treatment, this period of English history is generally split into three phases: the early or "pagan" period (*c.*5th to 6th centuries), the "Conversion Period" or "Final Phase" (*c.* early 7th to early 8th centuries), and the later or "Christian" period (*c.*8th to 11th centuries) (Dickinson 2011). As the people living in England during these different periods adopted distinctive burial types, and because there has been so much academic debate and systematic bias regarding various aspects of funerary treatment in each period, each phase will be discussed separately in brief to allow for a more comprehensive understanding of burial in Anglo-Saxon England.

3.1 Interpreting funerary data in archaeological contexts

3.1.1 Development of archaeological theory

In order to appropriately contextualise the study of Anglo-Saxon funerary data, it is necessary to briefly describe the development of the theoretical understanding of Anglo-Saxon archaeology as a field of study. Beginning with the work of Childe (1925), culture-historical approaches, which emerged in the early 20th century, focused on the use of material culture to identify specific cultures and ethnicities, and attempted to track the diffusion and migration of these peoples (Trigger 2006: 244, 311). In terms of Anglo-Saxon archaeology, culture-historians created various typologies of specific artefacts, and utilised these to trace the movement and settlement patterns of the "invaders" (e.g. Leeds 1913; Brown 1915; Åberg 1926).

As the flaws in a culture-historical approach to archaeological thought became apparent in the middle of the 20th century, a new type of processual archaeological theory emerged with the aid of radiocarbon dating (Lucy 1998: 17). Processual archaeology (or New Archaeology) investigated societies systemically and attempted to reconstruct social organisation and to understand how a particular society functioned and why it changed (Trigger 2006: 314, 334). Changes in material culture were no longer considered simply the product of migration and invasion, but as the consequence of internal transitions (Renfrew

1973: 272). In Anglo-Saxon archaeology, C. J. Arnold exemplified processual theoretical approaches by attempting to understand EAS society through an economic lens focused on wealth, resource availability, exchange, and grave goods (e.g. Arnold 1980; 1982; 1997).

Many archaeologists did not fully agree with this line of thinking, which did not afford sufficient agency to individuals within a society (Lucy 1998: 17). Thus, post-processual archaeology, pioneered by Ian Hodder, developed in the later 20th century. Post-processual archaeology acknowledged that archaeological information presented as fact was, in reality, influenced by the archaeologist's personal beliefs and attitudes, as well as the conditions of excavation (Hodder 1997). Under post-processual archaeological thought, the meaning of material culture began to transform, and there was more emphasis on the symbolic nature of artefacts and their use in the construction of individual and social identity (Hodder 1989; Croucher 2012: 81). With respect to Anglo-Saxon archaeology, there have been numerous studies which investigate the social and symbolic meaning behind mortuary treatment, including body positioning (e.g. Pader 1982; Lucy 1998), grave good assemblages (e.g. Härke 1990; Stoodley 2000), multiple burial (e.g. Stoodley 2002), and the funerary landscape (e.g. Williams 1997; 1998). Many different studies from all three schools of thought are addressed in Sections 3.2 to 3.4 to allow for a multi-faceted understanding of funerary treatment in Anglo-Saxon England.

3.1.2 The complexities of funerary data

Before the funerary treatment of the EAS, MAS, and LAS periods are considered, the complexity of exploring and interpreting funerary treatment in past societies, particularly societies for which contemporary documentary resources are lacking (EAS and some of the MAS periods), must be acknowledged. Härke (1997b) identifies several key aspects in the nature of funerary data that must be considered when producing informed conclusions about said data. First, the archaeological record is fragmentary and, therefore, what was included in the grave at the time of burial ("dead culture") does not always correspond with what is excavated ("retrieved culture") (Härke 1997b: 22). Second, the act of burial (which can be retrieved and interpreted by archaeologists) is only a *part* of the process of dying and bereavement, which

might begin before or when the individual dies and may continue on after burial (Härke 1997b). Therefore, the information gathered from a burial by archaeologists cannot take into account the essential events that may occur before and after burial. Third, most funerary data have their origins in rituals or behaviours and therefore *must* be considered in context (Härke 1997b). However, in many cases, archaeologists may recognise trends in funerary data, but are not able to fully understand these patterns if the context is unclear. Finally, Härke (1997b) stresses the importance of recognising the selective nature of funerary data: certain funerary rites or the inclusion of specific grave goods are selected by those performing the funerary ritual, and are therefore subjective.

Expanding on this concept of subjectivity, an important caveat must be considered: the dead do not bury themselves (O'Shea 1984: 10; Parker Pearson 1993). The funerary tableau which is uncovered and studied by the archaeologist was created, influenced, changed, or managed by the individuals who performed the funerary ritual (O'Shea 1984: 10; Parker Pearson 1993; Williams 2007b). Therefore, it is possible that the self or social identity that was reflected through funerary treatment (e.g. body positioning, orientation, grave good assemblage) was biased by specific living individuals to reflect what *they* wanted to portray, rather than what was truly representative of the deceased. This approach, which takes into account the agency of the living, allows archaeologists to consider the funerary tableau as a tool for political or social displays of power, familial, communal, or religious legitimisation (Williams 2004), or the manipulation of the identity or memory of the deceased.

Williams (1999) highlights the importance of recognising that many different individuals or groups of individuals would have been involved in the funerary proceedings for a deceased individual. Utilising modern ethnographic data, Williams (1999) concludes that in many cases, interactions between different groups in the funerary arena can lead to the clash of different ideologies, expectations, and beliefs about death and dying, which can be accentuated by the potentially variable levels of economic, cultural, social, political, or religious power of the groups involved.

Funerary rites can, in some sense, be considered ritualistic performance through which the survivors use symbolic, culturally understood language to manage and cope with the passing of the deceased (Laneri 2007: 3). The beliefs

and desires of the family or community members can take precedence in this ritualistic performance, and they can subsequently transform the deceased's post-mortem identity, and influence how the they are perceived in death (Williams 2007a). Personhood can consist of "dividual" aspects, meaning that identity may not always *be* individual. Instead, who someone is as a person is shared, exchanged, created, and shaped by both themselves and their relationships with others in their community (Brück 2004; Williams 2007a; Fowler 2016). Thus, while the archaeologist can excavate, clean, photograph, and analyse a single, seemingly straightforward burial, and make informed interpretations about the identity or the social, political, financial, or military status of the deceased, the complex interactions and contributions of the mourners cannot be ignored.

While the impact of the mourners must be taken into account, Williams (2004) argues that the agency of the deceased should not be underestimated, as there are many ways in which the dead may have influenced the living with regards to funerary treatment. They may have provided financial resources for their funerary treatment or specific instructions regarding how they are to be perceived after death (Williams 2004). The living may have been obligated to follow these instructions out of respect, fear, subservience, or family/kinship/community ties (Williams 2004). In many societies, the dead are believed to continue contact with the living world (ghosts, dreams, visions, etc.), and in some cultures, it is believed that the deceased can inhabit living individuals through spiritual possession or motivate the living to act on their behalf (Williams 2004). Therefore, although survivors have a fair amount of control over the funerary treatment of a deceased individual, the dead may continue to influence or manipulate their post-mortem identity even after they have passed.

The fragmentary, incomplete, contextual, and selective nature of funerary data, along with the theoretical approaches to understanding the agency of the survivors and the deceased must be considered in the Anglo-Saxon funerary sphere. The funerary tableau varied widely in Anglo-Saxon England, from the furnished inhumations and cremation burials of the early period to the more standardised, unfurnished, supine, extended inhumation burials of the later period (Lucy 2000; Hadley 2011; Welch 2011). In all cases, the information projected by the funerary data that is observable in the archaeological record cannot simply be taken at face-value. Instead, the funerary treatment should be

contextualised, and the possibility that there were external political, social, or religious influences, or that the projected post-mortem identity had been manipulated by the survivors or the deceased, must be considered. Of course, the extent to which burial treatment was affected by these factors will have been individually specific (i.e., political aggrandisement may have been of primary importance in the burial of one individual, while re-negotiating the perceived gender identity was essential in the burial of another individual). Those performing the burial were working within culturally accepted frameworks, but would still have been able to apply a personal touch.

3.2 Early Anglo-Saxon burial

In the years after the Roman retreat in the 5th century, the archaeological record reveals a marked shift in the treatment of the dead in England. Rather than primarily burying the dead, as was common in the Romano-British period, inhabitants began to practice cremation as well as inhumation. Cremation was an integral part of the EAS burial tradition, particularly in the eastern part of England (see Williams 2004; Squires 2013; Williams-Ward 2017). However, because this research focuses on the osteological analysis of well-preserved skeletal remains, cremation burials are not considered and therefore will not be discussed here. While cremation was common in the 5th century, inhumation did not altogether disappear (e.g. Butler's Field, Edix Hill, St. Anne's Hill). By the 6th century, inhumation was once again the most popular form of funerary treatment in England (Lucy 2000: 1), although cremation remained a culturally acceptable burial option into the 7th century (Stoodley 2010). Unlike the Romano-British inhumations which were usually unfurnished and located along major roads, EAS inhumation burials were located in more rural settings and, in many cases, were highly furnished (Lucy 1998: 3; Meaney 2003).

Although furnished inhumations became the dominant feature of the EAS funerary sphere, specific aspects of funerary treatment throughout England was extremely variable (Williams 2011). Many factors had a direct influence on burial treatment, including age, gender, social status, kinship, and local or community identities (Lucy 1997; 1998; Stoodley 1999; 2000; Reynolds 2009; Sayer and Wienhold 2013; Williams-Ward 2017), and, as mentioned above, the influence of the family and community (Williams 2011). The combined effect of these

numerous factors culminated in EAS cemeteries with considerable amounts of mortuary variability both within and between sites.

It is highly likely that religious or spiritual beliefs also influenced burial in the EAS period, however archaeology provides little information about religion in this period (Higham and Ryan 2013: 149-52). It is known that early Anglo-Saxons worshipped a range of gods (e.g. Tiu, Wutan/Woden, Thunor, Freia) and lesser spirits, and that temples (*hearg*) and other spiritual spaces (*wēoh*) existed (Higham and Ryan 2013: 149-52). Spirituality was probably closely intertwined with all aspects of daily life (Higham and Ryan 2013: 149-52), but the lack of archaeological and contemporary literary evidence prevents a detailed analysis of religious beliefs during the EAS period and how these beliefs may have influenced treatment in death. Although this is unfortunate, particularly because religious influences on MAS and LAS burial can be considered in depth (Chapters 8-10), it would be inappropriate to make assumptions about how spirituality affected funerary treatment in the EAS period (aside from acknowledging that it probably *did* have an effect) based on the limited evidence available.

The remainder of this section will briefly address the main ways in which EAS burials were variable: cemetery location and organisation, grave orientation, body and limb positioning, number of individuals included in a burial, and grave good assemblages.

3.2.1 Cemetery location

In general, EAS cemeteries were more frequently established in rural locations rather than near settlements, and the re-use of ancient monuments was extremely common (Lucy 1998; Williams 1998; 2006: 181-5; Semple 2013). Williams (1997) found that, of the EAS cemeteries throughout England that had been excavated and analysed at the time, 54% contained some evidence of monument re-use, while 35% contained definitive evidence of monument re-use. Bronze Age round barrows were the most popularly re-used monuments, although Roman buildings, Iron Age barrows and hillforts, and Neolithic long barrows were also utilised (Williams 1997) (Figure 3.1).

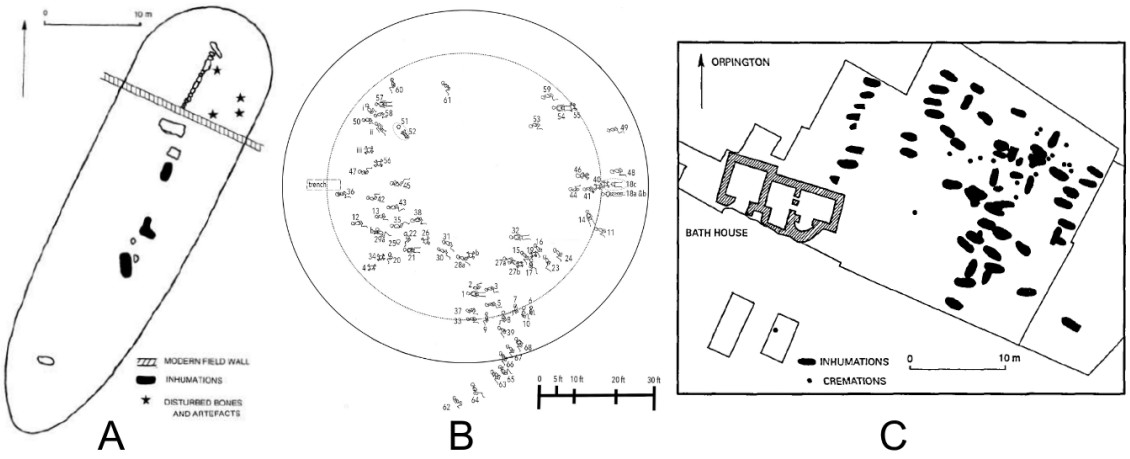

*Figure 3.1- Secondary EAS inhumations associated with ancient monuments. **A**: Neolithic long barrow in Lyneham, Oxfordshire. Source: Williams (1997: 9). © Howard Williams; **B**: Bronze Age round barrow at Uncleby, East Yorkshire. Source: Hansen (2017). © Abigail Hansen; **C**: Romano-British bathhouse at Orpington, Kent. Source: Williams (1998: 94). © Howard Williams.*

Culture-historical approaches propose that the early immigrating/invading Anglo-Saxons located their cemeteries in specific areas to establish geographically strategic points and to emphasise their military power (Myres 1942). However, more recent research considers the ritual, symbolic, social, and political motivations behind cemetery location, and specifically, the re-use of ancient monuments (Williams 1997; 1998; Semple 2013). Ancient monuments may have functioned as local or communal symbols of identity or ethnicity (Semple 2013: 58), and therefore the use of different types of monuments (e.g. round barrow versus Iron Age hillfort) may have served to distinguish between different communities (Williams 1997). By linking themselves with ancient monuments, communities were creating a "sense of place and belonging" that helped them establish symbolic relationships with the landscape and manage real relationships with their local or regional neighbours (Semple 2013: 59-61). As these ancient monuments were large and very visible, particularly from roadways, they may have served as reminders of their cultural and political significance to travellers through the Anglo-Saxon landscape (Brookes 2007).

Ancient monuments may have also served as tools to create a connection between the past and present (Brookes 2007). Through funerary association with an ancient monument, a community could "portray themselves as the legitimate heirs of the ancient peoples and supernatural beings that originally built these structures…", which would in turn solidify their political identity and validate their claim to the land (Williams 1998: 104). The addition of more burials to, and

evidence for alteration, elaboration, and emulation of these ancient monuments, suggest that there was a fluid and ever-changing symbolic relationship between the early Anglo-Saxons and these ancient monuments, which were an integral part of the funerary arena in this period (Williams 1998).

3.2.2 Cemetery organisation

While some EAS cemeteries do not seem organised with regards to grave placement, others have revealed clusters, rows, and lines of burials indicating that some sort of social spatial organisation was occurring (Williams 2011). In general, EAS cemeteries follow one of three models: monocentric, in which the cemetery expanded in multiple directions from a single focus or burial, horizontal stratigraphic, in which the cemetery expanded in one direction from a single place; or polycentric, in the which the cemetery expanded in many directions from multiple foci or burials (Hope-Taylor 1977: 262; Härke 1997a).

Traditionally, archaeologists divided EAS cemeteries into clusters or plots based on different funerary or social factors (e.g. age, sex, grave good type, body position), and in most cases these groups were interpreted as nuclear family units (Pader 1982; Hirst 1985; Evison 1987; 1994). More recent research argues that knowledge of specific funerary rites (e.g. what grave goods were included, the position of the corpse) may not have been transmitted between generations and therefore, spatial organisation in EAS cemeteries must be re-evaluated (Sayer and Wienhold 2013). Based on statistical analysis of the clustering observed in four EAS cemeteries, Sayer and Wienhold (2013) argue that cemeteries were not separated into small units reserved for nuclear family units, but were divided into larger areas, each of which was utilised for a longer duration for the interment of individuals of different social status from multiple household units. Therefore, specific aspects of the deceased's self or social identity were probably conveyed by the particular location of the body within the cemetery (Williams 2011).

3.2.3 Grave orientation

In EAS cemeteries, around a third of the graves were oriented W-E (with the head in the west), a number which rose to around one half in later cemeteries (Lucy 2000: 130). Grave orientation in general might be influenced by a number

of factors, including but not limited to aspects of identity, proximity to sacred structures, spaces, or natural features, relationships with walls, roads, and paths, the presence of other graves, and astronomical observations (Rahtz 1978). Many of these factors would have been pertinent in the EAS funerary arena, and several researchers have investigated the motivations behind burial orientation in this period.

Older research proposed various explanations for the variety of grave orientations observed in the EAS period. Faull (1977: 5-8) argued that individuals in graves oriented N-S or NE-SW in East Yorkshire were probably native Britons, while Hirst (1985: 28) suggested that the range of burial orientations could be explained by religious or spiritual influences: some individuals may have belonged to a sun cult and therefore burial orientation was linked to the direction of sunrise or sunset, while other individuals buried N-S or S-N may have been oriented towards a mythical location (e.g. Valhalla). Hawkes (1976) proposed that gravediggers at Finglesham oriented themselves by the location of sunrise, and that a change in orientation from N-S to W-E indicated a conversion from paganism to Christianity.

More recent research proposes that it is more likely that local or personal preferences may account for the wide orientation spectrum observed in EAS cemeteries. Lucy (2000) notes that orientation seemed to vary by cemetery: in some it was associated with age, sex, or with grave good assemblage (Lucy 1998), and the orientation of burials in one particular cemetery may have varied over the period of time that the cemetery was in use (Lucy 2000: 132). Similarly, Welch (1992: 75) proposes that the motivations behind burial orientation probably varied between individuals: although the orientation of the original burial in a cemetery might have been related to the direction of sunrise, the orientation of subsequent burials may have been influenced by local topography, landmarks, or monuments. Therefore, while it was more common for EAS graves to be oriented W-E, it was not the only acceptable burial orientation (Williams 2011), and those burials which do not align to the W-E orientation should not necessarily be considered atypical or deviant.

3.2.4 Body and limb positioning

Supine, extended burial was the most common body positioning in EAS burials (between 50-75%), but flexed and crouched burials were also relatively frequent (Brush 1993). The placement of the body on its right or left side also occurred frequently, and these burials could be in extended, flexed, or crouched positions (Lucy 2000: 80-1). When the positioning of the head, arms, hands, and legs is taken into consideration, the variation between EAS burials increases further.

Mui (2018) analysed the burial posture of 3,201 individuals from 32 EAS cemeteries and identified over 50 variations of the normative body posture (including the limbs) (Figure 3.2). Seven of these posture types accounted for 45% of the of the burials and were used throughout England (Mui 2018). Mui (2018) concluded that certain body postures were more popular in certain regions of England, and that body posture in the north was much more variable than in the south. She also concluded that body posture was associated with both sex and age: adult males were more likely to be buried extended and supine with extended arms, while females and non-adults were more likely to be buried in non-supine, non-extended positions (Mui 2018). In Norfolk, Williams-Ward (2017) observed that supine, extended burial was the most common, crouched burials were reserved for individuals over the age of 12, and body position variation was more common amongst males than females.

These previous studies clearly demonstrate the variability of funerary treatment with regards to body positioning both within and between regions of EAS England. The variability observed in the positioning of the body and limbs in EAS burials suggests that much care was taken in arrangement of the corpse, and that body and limb positioning were funerary tools by which aspects of identity could be projected after death (Lucy 1998; Williams-Ward 2017; Mui 2018).

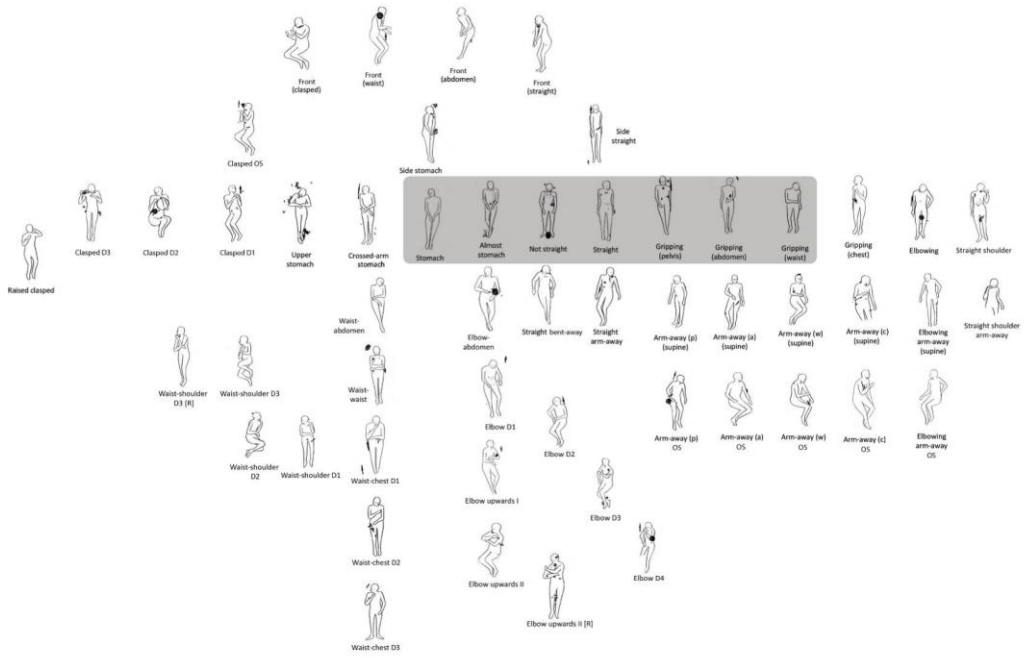

Figure 3.2- Summary of normative body posture types identified by Mui (2018: 102) highlighting the seven most common variations. © Sian Mui.

3.2.5 Multiple burials

While the burial of a single individual in a single grave was most common, the burial of two or more individuals in a single grave was reasonably frequent in EAS cemeteries (Stoodley 2002). A multiple burial could be either 1) contemporary, where two or more individuals were buried at the same time either horizontally (next to one another) or vertically superimposed, or 2) consecutive, in which a grave was re-opened to allow for the burial of a second individual (usually vertical superimposition) who had died at a later date (Stoodley 2002). It should be noted that describing the “insertion” of a second individual implies that two individuals were buried at different times, but in many cases it is difficult to determine whether the second individual was buried contemporaneously on top of the primary burial, or if they were buried at a considerably later date.

Of 46 EAS cemeteries that had evidence for multiple burial, the average percentage of multiple body burials was 5.4% per site, ranging from 0.9% at Holywell Row, Suffolk to 21.4% at Ports Down I, Hampshire (Stoodley 2002). Within this sample, all combinations of age and sex pairings were represented, but several important trends were observed. It was slightly more common for adults of the opposite sex to be buried together, and much more common for

adults and non-adults to be buried together (57.3% of total sample) (Stoodley 2002). The younger the non-adult, the more likely they were to be interred with an adult. It was also more common for a male adult to be buried with an older non-adult, while it was more common for a female adult to be buried with a younger non-adult (Stoodley 2002).

It is improbable that multiple burials primarily contained the remains of biologically related individuals as they would not necessarily die at the same time. Analysis of ancient DNA can be utilised to investigate the possibility of biological relationships between individuals in multiple burials (e.g. Simón et al. 2011; Meyer et al. 2012), but this was beyond the scope of this research. It is possible that two unrelated individuals from the same community who died at the same time were buried together for the sake of convenience. However, Mui (2018) found that the very old and the very young (who were more likely to die) were not usually buried in the same grave, and therefore argued that multiple burial was not simply a result of convenience. Instead, there was a conscious decision as to whether a multiple burial rite was appropriate (Mui 2018).

In many instances, the individuals in contemporary multiple burials including an adult female and a non-adult are interpreted as mother and child, while the individuals in multiple burials including two adults of the opposite sex are interpreted as husband and wife. However, while contemporary burial probably suggests a relationship in life between the two deceased individuals, other relationships besides the traditional ones must be considered (Stoodley 2002). The concept of the husband-wife double burial is weakened by the low probability that a wife and husband died simultaneously, and by the fact that, in some cases, there is a large age difference between the two adults (sometimes with the female being much older than the male) (Stoodley 2002). It is possible that contemporary double burials represented siblings, adoptive relationships, or simply two individuals who were associated in life through their lifestyle, profession, religion, or ethnicity (Stoodley 2002).

With regards to non-adult and adult contemporary multiple burials, it is possible that burying an infant with an adult female was the preferable mode of burial for this age group, even if the female was not related to the infant (Stoodley 2002). Non-adults were more likely to be included in the graves of adult females who were accompanied by girdle items (Stoodley 2002). In the past, girdle

hangers have been considered symbols of female economic authority within the household (Sherlock and Welch 1992; Haughton and Powlesland 1999; Leahy 2007; Penn and Brugmann 2007), or of a special social role involving children (Stoodley 2002). But more recently, Felder (2015) concluded that, while simple keys, latch-lifters, and hooks were found in highly furnished female graves, girdle-hangers were more commonly found in the graves of women with less elaborate grave goods who were also sometimes buried with amulets and bags. Therefore, instead of symbolising a female social role associated with household leadership, girdle-hangers may have been linked with women who had "medical knowledge and spiritual authority in allowing human life to enter and leave this world safely, and who dealt with the disruptive events of birth and death…" (Felder 2015: 14). Thus, the contemporary multiple burial of females with girdle hangers and non-adults can be contextualised: perhaps these females were involved in the childbirth process or had spiritual authority that might protect a potentially vulnerable non-adult in death.

Consecutive multiple burials in EAS cemeteries are more difficult to analyse, as determining when vertical superimposition occurred and if it was deliberate can be challenging. The consecutive burial of adult males and females was frequent (35%), and while the consecutive burial of an adult and a non-adult was still the most common pairing (45%), this type of burial was less frequent proportionally in comparison to contemporary multiple burials (Stoodley 2002). Males and non-adults were most likely to be buried in consecutive multiple graves, while there were no instances of the consecutive multiple burial of females and infants in Stoodley's (2002) study. In many cases, consecutive multiple burials have been interpreted as family plots, but Stoodley (2002) argues that they may sometimes be simply explained as the re-use of previous graves, because in many cases the remains of the primary individual were destroyed or carelessly moved to the side. However, there are many examples of probable deliberate vertical consecutive burials which did not result in the disturbance of the primary burial, and therefore the mnemonic value of consecutive burial and the possibility of a relationship between the primary and secondary occupants should be considered (Mui 2018).

3.2.6 Grave good assemblages

3.2.6.1 The complexities of interpreting grave goods

The history of scholarship regarding EAS grave goods and their relationship to ethnicity, identity, status, and wealth is a long and complex one. The traditional interpretation of EAS grave goods is directly connected with early scholastic views about the nature of the political transformation that occurred upon the arrival of the "Anglo-Saxons" in England in the 5th century. In recent years, the traditional explanation, mostly influenced by the 8th century historical writings of Bede, that the Angles, Saxons, and Jutes from the European continent invaded England after the Roman retreat and caused quick and widespread changes to all aspects of life in England, has been challenged (Lucy 1998: 21; Lucy and Reynolds 2002; Dickinson 2011).

Härke (2011a) proposes that, while there certainly was significant migration from the continent, this would have occurred over a long period of time, and the migrant groups would have varied greatly with regards to size, ethnicity, composition, origins, and point of settlement. It has been suggested that after the Roman retreat, native British leaders hired Germanic *foederati* soldiers for protection, who then rebelled and claimed power, thus paving the way for further Germanic migration (Härke 2011a; Higham and Ryan 2013: 104). Although migration from the continent was certainly occurring, Härke (2011a) argues that the majority of the population was still composed of native Britons, and proposes three co-existing models to explain settlement patterns in the 5th and 6th centuries. The 'war-band' model proposes that groups of Germanic males occupied some extant communities and married native British females, while the 'elite transfer' model suggests that Germanic elite gained power within a few native communities, supplanting the native leaders (Härke 2011a). The 'kin-group' model, which was probably more common and widespread than the previous two models, proposes that Germanic migrants and native Britons lived alongside one another within the same communities, but that there was minimal intermarriage between the groups and an obvious status discrepancy, with the native Britons occupying lower social statuses (Härke 2011a). Unidirectional adoption of the Germanic culture by the native population occurred, most likely beginning in the early 6th century (Härke 2011a). This gradually led to cultural assimilation of the native population and subsequent genetic mixing in the 7th and 8th centuries,

which, in turn, led to the emergence of a more uniform “English” cultural identity (Härke 2011a).

This idea of a social system that was separated based on ethnicity is supported by Thomas et al. (2006; 2008). Thomas et al. (2006) argue that the higher social and economic statuses of the individuals of Germanic ethnicity would have resulted in greater reproductive success, which ultimately resulted in the relatively large Germanic genetic contribution to the modern English population (Weale et al. 2002). Although this genetic make-up could potentially be explained by a very large-scale immigration (500,000+) in the 5th century, computer simulation demonstrated that it is possible for the increased reproductive success of a smaller migrant population to result in the genetic contribution observed in the modern English population, with an increase from 10% to 50% occurring in only five generations (Thomas et al. 2006). However, this model has been criticised by Pattison (2008; 2011: 715) who argues that people of Germanic descent had been migrating to England in the centuries before the Roman retreat, and therefore their “long-term, low level” migration can potentially account for the amount of Germanic genetic contribution observed in the English population today, without assuming the existence of a social hierarchy based on ethnicity. It is clear that, while it is now widely accepted that there was no rapid, violent replacement of the native British population by a large-scale influx of Angles, Saxons, and Jutes, the settlement patterns of the Germanic migrants, and the social structure resulting from their arrival are still topics of much academic debate.

Although research now points towards a combination of migration, population continuity, and acculturation/assimilation (Higham and Ryan 2013: 104), the pervasive and long-lived historical framework that argued for the rapid invasion of continental tribes, created a tendency for past archaeologists to use grave goods as a means to distinguish between ethnicities (e.g. Wright 1852; Leeds 1913; 1936). This historical framework led to the creation of chronological and geographical sequences using excavated grave goods, many of which are still in use today, to attempt to map the invasion of England by the Anglo-Saxons (as cited by Lucy and Reynolds 2002). This line of thinking simplifies what was a very complex process (Lucy 2002), and in more recent years, while it is recognised that there certainly were geographical differences in dress (as

observed through grave goods), researchers propose that the use of a specific style was more likely to signal local, regional, or tribal affinity rather than overall ethnicity (e.g. Germanic or Briton) (Lucy 2002; Hills 2011).

Other ubiquitous difficulties involving the interpretation of grave goods in archaeological contexts must also be addressed. As mentioned in Section 3.1.2, archaeologists must be aware of the various, invisible motivations behind specific funerary treatment, and that different agents (e.g. single individuals, family units, local communities) probably influenced and potentially manipulated the funerary tableau that is revealed upon excavation. The same is true of a grave good assemblage: it "constitutes a hall of mirrors, representations of representations, in which things may not be entirely what they seem at first glance" (Parker Pearson 1999: 9). The items found accompanying the dead may have been their own property and representative of their lives, but it is unlikely that this was always the case. Grave goods may have belonged to the family or friends of the deceased. They could have served to renegotiate identities (Devlin 2007) and might have reflected an identity that the deceased wished to occupy in life, or perhaps the identity that their family, friends, or community wished that they had occupied. In some cases, grave goods may have been appropriately representative of personal wealth, but it is equally possible that 1) individuals/families of lower economic or social status saved up to include more expensive, unique grave goods in order to improve their social position in the time after the passing of the deceased (Devlin 2007), or 2) that individuals/families of a higher economic or social status decided to only include less expensive grave goods that could be easily parted with (Parker Pearson 1999: 9). Therefore, it is inappropriate to assume that the number, variety, or rarity of grave goods are directly correlated with the wealth of the individual and their social status (Arnold 1997: 175-6).

Along with complex and archaeologically invisible motivations, the various functionalities of grave goods must also be considered. These will vary geographically, culturally, temporally, and perhaps locally. Grave goods may have been included in burials to ensure the deceased was well-provided for in the afterlife, an idea which is echoed in *Beowulf*, an Old English story written between the mid-7th to late 10th centuries (Heaney 2000: vii, 5). They may also have been used as biographical objects that were intended to tell the life story of

the deceased (Härke 2014), or as heirlooms which may have had sentimental connotations, represented familial or communal relations, or emphasised a shared ancestral past (Lillios 1999). Construction of an individual's identity can be closely related to their interactions with specific daily objects (Devlin 2007), and it has been proposed that the social or symbolic transformations that both people and objects go through are intimately linked with one another (Gosden and Marshall 1999). Therefore, when objects which have acquired a life history or biography over time are included as grave goods, they can be considered mnemonic devices or "conduits of memory", which reflect specific aspects of the deceased's life and/or identity (Devlin 2007: 41).

King (2004) proposes that the objects included in EAS grave good assemblages may represent gifts given by each member of the community during the funeral. Grave goods may have functioned as offerings to spiritual beings, or might be the remnants of a funerary feast (e.g. pots, animal bones, food) (Härke 2014). Certain objects may have been included in graves because they were considered polluted (e.g. toilet sets?), because they were intended to protect either the deceased or the living, or because the inclusion of an item which was personally significant to the deceased would help their survivors manage their grief (Härke 2014).

In summary, the symbolic approaches to funerary archaeology, the myriad of potential "functionalities" of grave goods, and the various and possibly conflicting motivations of the individuals performing the burial *must* be considered when interpreting grave goods in EAS England. The grave goods included in a burial were an essential aspect of EAS funerary treatment and probably served to create, manage, and manipulate the relationship between the deceased, those burying them, and their surrounding community (Huggett 1996). The following sections briefly describe grave goods that are commonly encountered in EAS cemeteries.

3.2.6.2 Common early Anglo-Saxon grave goods

EAS burials were very frequently accompanied by grave goods, including but not limited to dress fasteners and jewellery (brooches, beads, pendants, buckles, girdle items, etc.), weapons (spears, shields, swords, axes, etc.),

personal equipment (knives, toilet sets, tweezers, etc.), and grave furnishings (pots, buckets, boxes, coins, etc.) (Stoodley 2000) (Figure 3.3).

*Figure 3.3- Examples of EAS grave goods. **A**: silver-gilt plated disc brooch from Wingham cemetery, Kent (6th-7th C); **B**: glass cone beaker from Kempston cemetery, Bedfordshire (5th-6th C); **C**: iron pattern-welded sword blade from Sutton Hoo ship-burial Mound 1, Suffolk (6th- early 7th C); **D**: copper alloy pair of girdle-hangers on a slip-knot ring from Soham cemetery, Cambridgeshire (5th-6th C); **E**: gold tear-shaped pendant set with garnets and blue glass from King's Field cemetery, Kent (7th C). Source: The British Museum (Anon 2019a). All images © The Trustees of the British Museum. Shared under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) licence.*

3.2.6.3 Grave goods, sex, and gender

One aspect of EAS funerary treatment that did not generally vary was the association between grave goods and sex (Huggett 1996; Crawford 2014). Lucy (2000: 87) identifies three different burial groups with regards to grave good types: 1) burials with weapons, 2) burials with items of jewellery, and 3) burials with other types of goods. Traditionally, individuals buried with weapons were assumed to be male warriors, individuals buried with jewellery were assumed to be female housewives, and those buried with neither type of assemblage or who were buried with no grave goods were assumed to be individuals from the poor or slave classes (as cited by Lucy 1997). However, more recent research has established that while there is a strong, but not exclusive, correlation between weapons burials and males and between jewellery burials and females, a large portion of adults were buried with grave goods indicative of neither gender (Lucy 1997; Stoodley 1999). In addition, many EAS individuals buried with weapons or jewellery remain unsexed, and so the link between weapons and males and jewellery and females is not clear. Therefore, it is likely that gender as a social construct within the EAS world was "dynamic and actively constructed (albeit often unconsciously, and within culturally-defined limits)" (Lucy 2011: 695). Local and chronological differences between gendered grave good assemblages can be expected as gender construction would have varied between different communities and with time (Lucy 1997; 2011). The lack of exclusive association between gendered grave good assemblages and biological sex, and the considerable number of "un-gendered" adult grave good assemblages, suggest that grave good inclusion was more likely to be related to age, social position, or family lineage of the deceased than to biological sex (Lucy 1997).

3.2.6.3.1 Weapons burials

Weapons burials, which have been interpreted as "warrior graves", traditionally were considered to contain an individual that was, in fact, a warrior (as cited by Härke 1990). More recent and contextualised research investigates this widespread assumption in order to critique the traditional thinking associated with weapons burials. Härke (1990) examined weapons burials in 47 EAS cemeteries and concluded that 1) the weapons burial rite was not correlated to the intensity of warfare (i.e., more battles did not lead to an increase in weapons

burials), 2) the weapons included in these “warrior graves” were not always typical of a truly functional kit that would be used in battle, 3) the inability to fight did not exclude an individual from burial with weapons, 4) probable participation in battle (i.e., evidence of battle trauma) did not necessitate burial with weapons, and 5) burial with weapons was correlated with increased burial wealth and labour investment in the burial.

These interpretations suggest that a weapons burial was more likely to be a “symbolic act…[and] not a reflection of a real warrior function, but the ritual expression of an ethnically, socially, and perhaps ideologically based ‘warrior status’” (Härke 1990: 43). In addition, a weapons burial should not necessarily be assumed to be that of a male, as exceptions do exist (Lucy 1997) (perhaps warriors were not necessarily male), and the ritualistic symbolism of weapons must be considered (Härke 1990). This approach is particularly important when a sword is included in a burial. It has been proposed that swords in EAS burials were imbued with very special social, political, and personal significance (Brunning 2013; Sayer et al. 2019). Swords were owned by multiple people, passed down through generations, and therefore, with time, their biographies and identities were continuously renegotiated (Brunning 2013; Sayer et al. 2019). Swords were modified for use by different owners, owners had to modify their movements and muscles to effectively use their sword, and therefore swords “were part of people, inseparable, intermeshed, and displayed with an emotive mortuary aesthetic” (Sayer et al. 2019: 542).

In summary, the interpretation of weapons burials in EAS England is not as straightforward as once thought. It is certainly possible that an EAS individual buried with weapons was, in fact, a warrior in life, however, this is not the only explanation for this mortuary treatment. As suggested by Härke (1990), it is also possible that the inclusion of weaponry might be more indicative of an individual’s or family’s economic or social standing or evidence of their Germanic ancestral origin. Brunning (2013: 31-2) points out the possibility that the inclusion of weapons in the burial of an individual who was less likely to actually be a warrior in life (e.g. non-adults, individuals with physical impairment) was actually an attempt by those performing the burial to construct an identity for these individuals in death that was not available to them in life. The same approach may have been applied to the burials of adult males with weapons: perhaps there was actually

more incentive to include weapons in the burials of those men who were *not* warriors to project a desired post-mortem identity which might not have been attainable or available in life (Brunning 2013).

3.2.6.4 Grave goods and age

Stoodley (1999; 2000) argues that there was a "two-tiered system" functioning in EAS England with regards to grave goods: one tier was based on gender and the other on the attainment of maturity. Below the age of two or three years, individuals were buried with fewer grave goods, and from this point on, an increase in age was associated with an increase in the number and types of accompanying grave goods (Stoodley 2000). Stoodley (2000) identified a specific kit (small spears and knives, pots, bracelets, and beads/small necklaces) that was considered appropriate to include with non-adults over the age of two or three. Because these items were somewhat similar, albeit smaller and less well-made, than the grave goods included in adult burials, it appears that once a child had survived past the age of two to three years, they were considered little girls or little boys, on their way to fitting into a mature gendered group (Stoodley 2000).

A change in grave good assemblage was observed around the age of 10-12 in children buried with jewellery (female sex assumed from grave goods): there was an increase in the inclusion of brooches and necklaces (Härke 1997a; Stoodley 2000). A similar threshold was noted in children buried with weapons (male sex assumed from grave goods): after the age of 12, shields and swords could be included in the grave (Härke 1997a), and spears became more frequent (Stoodley 2000). This threshold age has been interpreted to signal biological puberty (Stoodley 2000) or to indicate the transition from child to adult status (Crawford 1991; 1999: 14-32). However, the most obvious increase in number and type of grave goods occurred between 18-20 years, and this has been proposed to mark the age at which an individual socially transitioned from a child to an adult (Härke 1997a; Stoodley 2000; 2011). The fact that there was a gendered age threshold around the time of puberty (Crawford 1991; 1999; 2000) *and* a further age threshold around 18-20 years, which may have marked entrance into full adulthood (Härke 1997a), is particularly important for females, as it demonstrates that female gender was not constructed completely around

the ability to bear children, but rather around aspects of social identity as well (Stoodley 2000) (Figure 3.4).

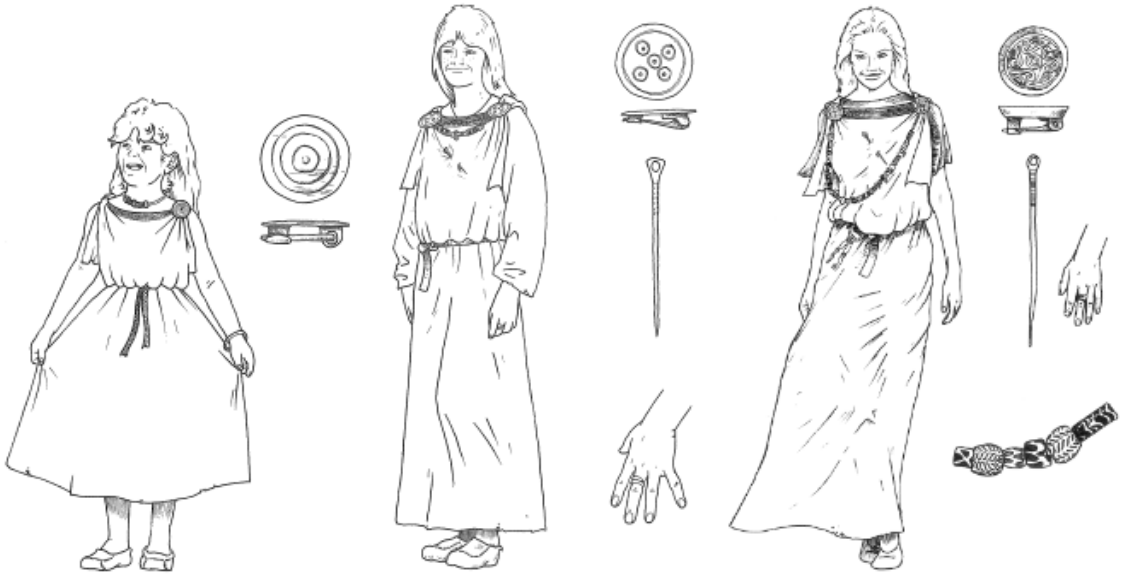

Figure 3.4- Drawings demonstrating the symbolism associated with the three stages of the female life cycle in the EAS period. Source: Stoodley (2000). © 2000 Taylor & Francis Ltd 0043-8243.

3.2.7 Deviant burial

A review of deviant burial practices in the archaeological record discusses the ways in which deviant burials have been interpreted throughout the evolution of British archaeological theory (Aspöck 2008). Although the term “deviant burial” is meant to indicate simply that there is a deviation from the expected or normal funerary rite, this terminology tends to have negative implications (Aspöck 2009), even though deviation from the norm can also have positive connotations. “Atypical” or “non-normative” are more neutral terms which are utilised in this research (unless negative connotations are implied). These terms, like “deviant”, suggest that the burial treatment observed is different from what is considered normal, but they have less prominent culturally constructed connections to negative concepts of otherness. Culture-historical interpretations proposed that EAS prone burials (see below) could be explained by a drunk (Rolleston 1869) or lazy individual performing the burial, by the effects of decomposition (as cited by Aspöck 2008), or as a means to identify an individual’s ethnicity (e.g. Faull 1977). Rejecting these oversimplified theories, processual archaeologists argued that a deviant burial was the result of a disruption in the normal relationship between an individual and those burying them, causing a distortion of the normal

aspects of “social persona” (age, sex, social status) (Binford 1972: 225-6) as reflected in mortuary treatment (Shay 1985). This focus on “society as a system” was expanded upon by post-processual archaeologists who emphasised the ritual, symbolic nature of deviant burial, which in many situations was argued to be associated with concepts of liminality and marginality, individualism, and the agency of the dead and the living (Aspöck 2008: 49).

Thus, in any archaeological society, it is essential to consider the many different sociocultural factors that may have influenced deviant burial. This can be particularly challenging for EAS burials as normative burial treatment in this period was extremely variable (Sections 3.2.1 to 3.2.6), making true deviations from the norm difficult to define and identify. A deviant funerary rite might be lost amongst the normal variation observed in the EAS period, or funerary treatment assumed to be deviant by archaeologists may simply have been a less frequent variation of a normative mortuary ritual. However, there were certain EAS mortuary practices that were sufficiently rare as to be potentially considered deviant (with negative connotations) or atypical. Reynolds (2009: 61-95) proposes that these burial rites include: prone burial, in which the body is placed face down (Figure 3.5); decapitation burial, in which the head of the deceased is removed either pre or post-mortem; and stoned burial, in which large or small stones are placed on top of the buried individual (Reynolds 2009: 61-95).

Prone burial has previously been associated with superstition and fear of the dead (Hirst 1985: 36-7), witchcraft (Sherlock and Welch 1992: 26), and cowardice (Evison 1987: 134) in EAS contexts. There is no direct evidence to suggest that prone burial should be considered to have negative connotations (this treatment may have been atypical rather than deviant), and this funerary treatment does not appear to be associated with a particular type of person. Males, females, and non-adults were buried in the prone orientation, and individuals buried prone were in poorly or highly furnished graves that varied in orientation (Reynolds 2009: 68-9). Therefore, Reynolds (2009: 75) argues that the motivations for prone burial probably varied on a case-by-case basis, but suggests that this funerary treatment may have been utilised to render the deceased safe to the living.

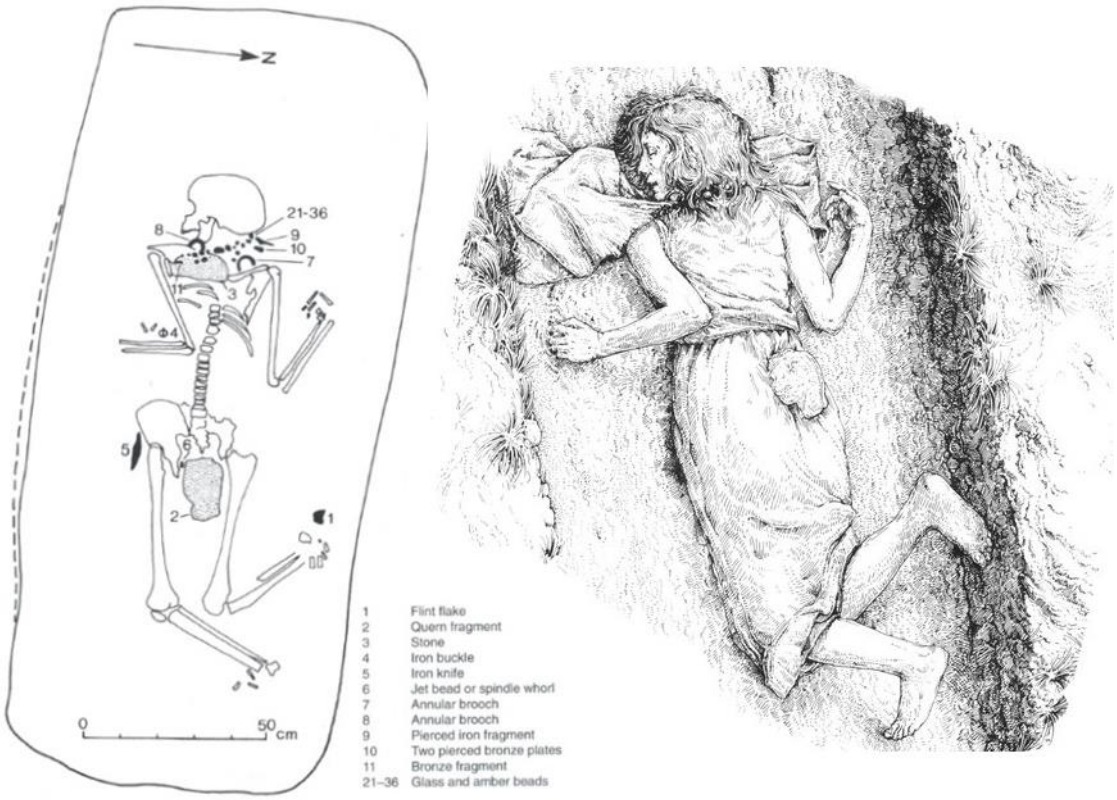

Figure 3.5- Left: Grave drawing of prone burial Sewerby G41. Right: Reconstruction of prone burial Sewerby G41 by David A. Walsh. Source: Hirst (1985). © 1985 York University Archaeological Publications.

Decapitation is less common than prone burial in EAS cemeteries and is evenly distributed throughout central England, but less frequent in eastern England (Reynolds 2009: 81). Of the 54 possible examples of decapitation identified, 50% were male and 52% were buried in unfurnished graves (Reynolds 2009: 78). Reynolds (2009: 92) argues that, as with prone burial, decapitation may have been a method by which to ensure that the suspicious dead was properly laid to rest, an act which may have been required due to familial or communal disorder.

Stoned burial occurred in both male and female adult burials and less frequently in non-adult burials (Reynolds 2009: 82). The proportions of stoned burials that were unfurnished, poorly furnished, or highly furnished are similar to those of the normative population (Reynolds 2009: 82). Reynolds (2009: 93) proposes that stoned burial may have had dual functions: to mark out individuals with disease, or to physically weigh down visually distinctive individuals who may have been considered suspicious, although osteological analysis of the individuals afforded stoned burials is necessary to support this hypothesis.

3.2.8 Summary

As there were many different mortuary practices employed in the EAS period, it is difficult to describe a standard “normative” EAS burial. What can be concluded is that variation (within limits) with regards to cemetery location and organisation, grave orientation, body and limb positioning, inclusion of multiple individuals, and grave good assemblages was expected in EAS cemeteries. Sections 3.2.1 to 3.2.7 clarify the need for archaeologists to appreciate the complexity of the EAS funerary sphere. The motivations of the deceased, their family, and community, the desire to express certain aspects of social or self-identity (e.g. gender, age, religion, social, economic, or political status, ethnicity/regionality), the need to appropriately mourn and remember the dead, and the various functionalities of grave goods must all be taken into account when interpreting EAS burials.

3.3 Conversion Period or “Final Phase” burial

According to historical sources, from the early 7th to early 8th centuries, the majority of the population of England converted to Christianity (Geake 1992; Higham and Ryan 2013). During this century long transition period in Anglo-Saxon society (sometimes labelled the Conversion Period but referred to as the MAS period in this research), burial can be generally categorised into one of four groups: “Final Phase” burials, “princely” burials, unfurnished burials, and deviant burials (Geake 1992).

3.3.1 The “Final Phase” burials

The term “Final Phase” was first described by Leeds (1936) who observed the noticeable decrease in furnished burial in several MAS cemeteries, and proposed that these cemeteries represented the final phase of EAS Anglo-Saxon paganism before complete conversion to Christianity. Lethbridge (1931; 1936) also identified several similar cemeteries at Shudy Camps and Burwell in Cambridgeshire, but proposed that the individuals buried in these cemeteries represented the earliest Anglo-Saxon Christians, an idea which remained prevalent in Anglo-Saxon archaeology until the later 20th century (Hyslop 1963; Hawkes 1976).

Regardless of the cause/s behind the observed changes in funerary treatment, which are discussed in Section 3.3.5, “Final Phase” burials were distinguishable from typical EAS burials. In a break with the past two centuries, inhumation was (almost always) the only burial method used, and the cremation burial rite faded away (Boddington 1990). The inhumed body was usually supine, extended, and oriented with the head to the west, and the arms were placed across the body or at the sides (Geake 1992). “Final Phase” cemeteries also tended to be more orderly and structured than the EAS cemeteries (Welch 2011).

While “Final Phase” burials were still usually accompanied by some grave goods, there was a noticeable decrease in the number and type of grave goods included, and some of them had Christian symbolism (Crawford 2004; Williams 2010). There was also a change in what types of grave goods were normally included in a burial, and assemblages became less gender-specific (Hamerow 2016). The brooches and longer bead strings frequently found in EAS graves began to disappear (Boddington 1990), and jewellery assemblages generally consisted of pins, shorter necklaces of monochrome beads (Figure 3.6), pendants, bags, boxes, and chatelaines with purse-mounts and workbox accessories attached (Geake 1992). It has been proposed that necklaces were used to construct a high-status identity for women in this period and may have been associated with religious roles (Hamerow 2016). There was also a notable increase in the number of amuletic items included in female burials (e.g. animal teeth and claws, cowrie shells, fossils) and containers including leather or cloth pouches, wooden boxes, and copper workboxes (Hamerow 2016).

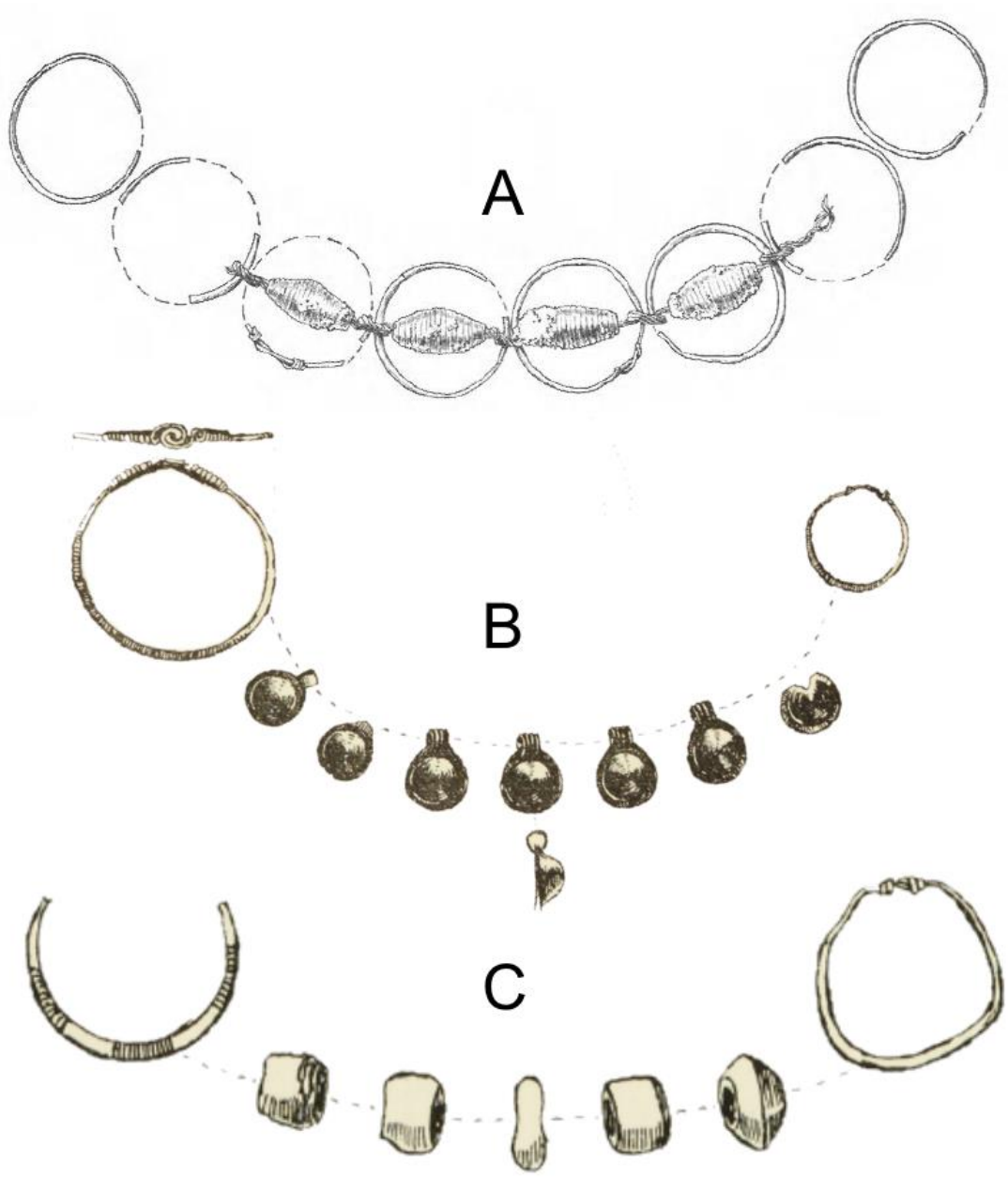

Figure 3.6- Typical beaded necklaces found in "Final Phase" burials. Source (A): Hyslop (1963). © Royal Archaeological Institute; Source (B-C): Lethbridge (1931: 53, 68), reprinted by kind permission of the Cambridge Antiquarian Society.

Weapons were much less frequent than in the EAS period, and grave goods assemblages associated with males tended to include buckles and knives (Geake 1992). While the overall number of grave goods decreased, there was a noticeable increase in the level of burial wealth variation: while a majority of burials had few or no grave goods, a few had comparatively very rich assemblages (Geake 1992).

3.3.2 “Princely” burials

The second type of burial found in the 7th and 8th centuries is the “princely” burial. While certainly not as common as the typical “Final Phase” burial, there are various examples of extravagantly rich burials throughout Anglo-Saxon England, including those at Sutton Hoo in Suffolk, Ashthall and Cuddesdon in Oxfordshire, Broomfield and Prittlewell in Essex, Taplow in Buckinghamshire, Caenby in Lincolnshire, and Coombe in Kent (Geake 1992; Welch 2011). These types of burials share some of the same characteristics with the “Final Phase” burials such as orientation and body positioning, but are usually found beneath re-used or newly constructed mounds or barrows, and are sometimes inside of wooden chambers or associated with part of a boat (Figure 3.7).

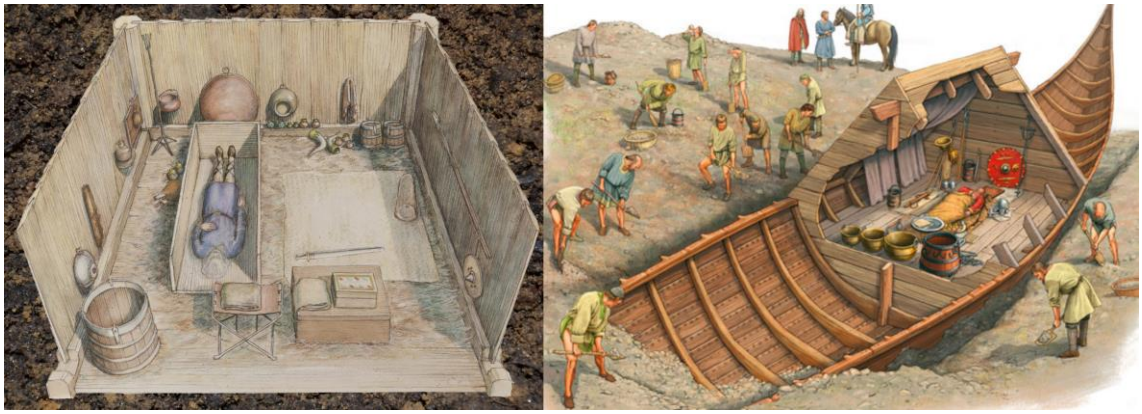

Figure 3.7- Left: Reconstruction of the Prittlewell princely burial chamber. Source: MOLA (Anon 2019b). © MOLA; Right: Reconstruction of a boat burial at Sutton Hoo. Source: CurriculumVisions.com © 2004 Atlantic Europe Publishing.

As the first “princely” burials coincide with the beginnings of conversion to Christianity in the early 7th century, it has been suggested that these types of burials should be interpreted as overtly pagan protests by the aristocrats against the spread of the foreign religion (Van de Noort 1993: 106; Carver 1998; 2001). However, there are several examples of later 7th century extravagant female barrow burials (e.g. Roundway Down and Swallowcliffe Down in Wiltshire, and Cow Low and Winster Moor in the Peak District), some of which are accompanied by grave goods with obvious Christian connotations (Crawford 2004). Thus, the proposal that the extravagant “princely” burials were utilised to demonstrate cultural and religious resistance to the spread of Christianity seems less likely. It is more likely that this type of extravagant burial developed as an appropriate alternative for Christian elite burial (Hadley 2000; Welch 2011) in response to

increasing social stratification due to the territorial and political growth of newly forming kingdoms (Lucy and Reynolds 2002).

The appearance of monumental female burials after the fading of the male "princely" burials (Welch 2011), along with the overall increase of highly furnished female burials, and the changing types of objects included in these burials, indicate that the concept and construction of the female gender in the 7th to 8th centuries was changing (Hamerow 2016). It is possible that "the transmission of family memory was largely the responsibility of women, making them central to the legitimation of family power. This, coupled with their child-bearing role, would have made women lynchpins of the dynastic structure of aristocratic families" (Hamerow 2016: 445-6). Therefore, it has been proposed that these remarkable female graves legitimised a family's political or financial claim to land, and provided a spiritual conduit by which families could commemorate their ancestors (Hamerow 2016).

3.3.3 Unfurnished burials

The third category of burial observed in the 7th and 8th centuries is the unfurnished burial (Geake 1992), which is found in both churchyard and non-churchyard cemeteries. In general, these cemeteries contain a majority of unfurnished graves (Geake 1992; Buckberry 2010) and can be found in urban settings (e.g. Castle Green, Hereford), rural settings (e.g. Burrow Hill, Suffolk and Burgh Castle, Norfolk), or in association with a known church (e.g. Staunch Meadow, Suffolk and Nazeingbury, Essex) (Geake 1992).

Similar to the "Final Phase" burials, unfurnished burials usually contain supine, extended individuals who are oriented with the head to the west (Geake 1992). Occasionally pins and knives, which are difficult to date, are found in association with some individuals in these unfurnished cemeteries (Geake 1992; 2002). Chest burial is a 7th to 9th century funerary rite most frequently found in northern England (Craig-Atkins 2012). Chest burials (burial inside of a wooden chest) are primarily found in unfurnished cemeteries in both churchyard and non-churchyard settings, and this funerary rite has been interpreted as one specially reserved for a select group of individuals of higher status (Craig-Atkins 2012).

3.3.4 Deviant burials

As in the EAS period, individuals who were decapitated, buried in the prone orientation, or covered with stones have been considered deviant in the MAS period (Reynolds 2009: 37), and can be found in regular cemeteries alongside individuals afforded normative burial treatment. However, in the MAS period, cemeteries containing large portions of individuals afforded deviant funerary treatment began to appear, many of which have been interpreted as execution cemeteries (Geake 1992; Reynolds 2009).

Almost without exception, execution cemeteries were located on the boundaries of counties, hundreds, or boroughs, and were almost always visible from water or road routes (Reynolds 2009: 155). These cemeteries are typified by a lack of grave goods and disorganisation of the cemetery layout and of the bodies within the graves (Geake 1992). The layout of execution cemeteries is variable: individuals might be buried together in one grave or in satellite burials surrounding mounds or barrows (Geake 1992; Reynolds 2009) (Figure 3.8). Reynolds (2009: 159-78) summarises funerary treatment commonly observed in execution cemeteries, including prone and right/left side burial, burial with the hands or legs tied, burial with objects placed on top of the corpse, multiple burials, and decapitation (Figure 3.9).

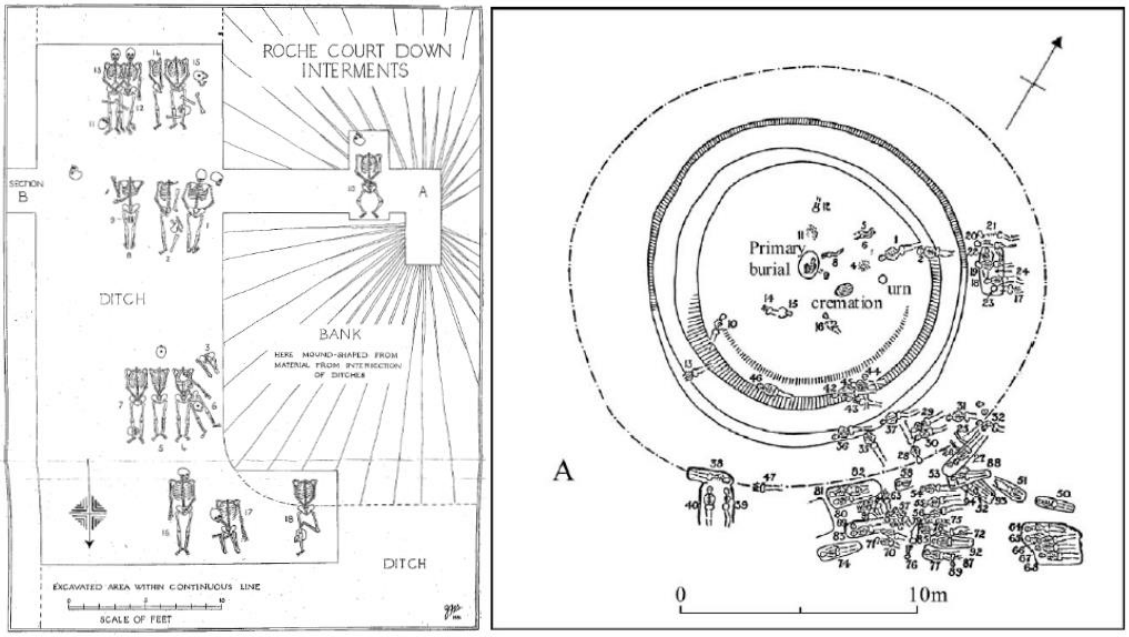

Figure 3.8- Left: Plan of the execution cemetery at Roche Down Court, Wiltshire. Source: Stone (1932: Plate 1). © Wiltshire Archaeological and Natural History Magazine; Right: Plan of the execution cemetery at Dunstable, Five Knolls, Bedfordshire. Source: Dunning and Wheeler (1931). © Royal Archaeological Institute.

Figure 3.9- Top: Double grave from Weyhill Road, Andover. Both males have their hands tied behind their backs and SK1175 is buried prone. Source: Cotswold Archaeology (Anon 2017), reprinted with kind permission of Cotswold Archaeology. Bottom: Decapitated skeletons from Meon Hill, Hampshire. Source: Liddell (1933). © Hampshire Field Club & Archaeological Society.

Execution cemeteries were not considered for this research because they frequently did not to fit the inclusion criteria (i.e., many had less than 50 individuals), and they also tended to contain a very high proportion of individuals who were afforded deviant burial rites. An investigation into whether physical impairment influenced non-normative burial treatment would be hindered by the fact that a large portion of the entire execution cemetery burial population would have been afforded non-normative burial treatment. It would, however, be interesting to explore the presence of individuals with physical impairment in execution cemeteries and to compare their funerary treatment between sites (Section 11.1).

3.3.5 Traditional and recent interpretations

The concepts of the Conversion Period and the “Final Phase” have given rise to much academic debate about contemporary changes in burial rites and the motivations behind these changes. Traditionally, it has been suggested that

the transition from furnished to unfurnished burials exemplified the conversion of the pagan Anglo-Saxon population to Christianity (Lethbridge 1931; Leeds 1936; Lethbridge 1936; Meaney and Hawkes 1970: 50-5). Considered the embodiment of this religious transitional period in Anglo-Saxon society, burials could be separated into furnished pagan burials and unfurnished Christian burials (as critiqued in Morris 1983: 51; Sayer 2013). This categorisation was based on the traditional idea that the uniform beliefs promoted by the Christian faith would subsequently encourage a much more standardised form of burial (Hyslop 1963), and that the church would actively discourage the use of grave goods (Meaney and Hawkes 1970: 53-4). However, there is little documentary evidence to support this theory (Bullough 1983; Morris 1983: 54), and it appears that the Anglo-Saxon church was not highly involved with dictating how people were buried or what was included in their graves (Boddington 1990; Geake 1992; 2003). Still, it is unlikely that such a massive upheaval in religious belief would have absolutely no effect on funerary practices (Hadley 2009; Welch 2011).

Multiple theories have been proposed to explain the changes in burial rites observed during this period. Carver (1989; 2002) suggests that, due to the emerging kingdoms and increasing power of individual rulers, there may have been a simultaneous increase in taxation, leaving less wealth to be spent on funerals and burial goods. Arnold (1982) proposes that internal and external stresses due to resource availability and population growth resulted in changes in the Anglo-Saxon social structure and subsequent changes in grave good assemblages. Geake (1992; 2002) maintains that the decrease in variation in grave good assemblages indicates that there was an ideological change occurring during this period, one that led Anglo-Saxons to leave behind old customs and usher in new more cohesive “English” rituals. Williams (2010) proposes that during the 7th and 8th centuries, there was a shift in how people were utilising grave goods. He suggests that the reason for a decrease in grave goods was due to an increase in the commemorative, mnemonic use of objects for circulation in life rather than for deposition with the deceased (Williams 2010). Morris (1983: 50) argues that while the church may not have been overly concerned with what went into a grave, a slow but general acceptance of the tenets of Christianity meant that the inclusion of grave goods was simply no longer spiritually necessary. Or, as proposed by Williams (2010), more investment was being made in external and more permanent but archaeologically

invisible funerary display. Thus, the motivations for the changing funerary rites observed in the MAS period are complex, but it is likely that this shift in mortuary treatment can be attributed to a combination of religious, social, personal, economic, and political factors (Hadley 2000; Buckberry 2010).

3.4 Later Anglo-Saxon burial

It is typically assumed that the conversion of the Anglo-Saxon population to Christianity resulted in a shift from non-churchyard to churchyard cemeteries, and that the funerary variation observable in previous centuries disappeared in favour of standardised mortuary treatment in line with Christian thinking (e.g. Hyslop 1963; Meaney and Hawkes 1970: 54). The majority of LAS burials were supine, extended, oriented W-E, and were usually organised in rows (Hadley 2011). However, recent research has revealed that, despite some level of standardisation, mortuary treatment in terms of cemetery location and burial form was not as uniform in the LAS period as previously thought (see Hadley 2002; Thompson 2002; Hadley and Buckberry 2005; Buckberry 2007; Hadley 2007; 2009; Buckberry 2010; Cherryson 2010).

3.4.1 Cemetery type

While there is evidence demonstrating that churchyard burial began in England in the 7th century, these cemeteries were certainly not the only type utilised before the 10th century (Hadley 2000). There is a continuation in the use of churchyard cemeteries, non-churchyard cemeteries, and execution cemeteries, but “Final Phase” cemeteries do not continue into the LAS period (Buckberry 2010). Evidence suggests that, in some cases, 10th and 11th century Anglo-Saxon churches were built in association with burial grounds that were already in use at the time, suggesting that non-churchyard burial did occur into the late 8th and 9th centuries (Hadley 2000). Therefore, before the 10th century, when the first documentary evidence is found of legislative control over burial location, churchyard burial was neither “expected [n]or demanded” of the Anglo-Saxon population (Hadley and Buckberry 2005: 127). After the general conversion of the population, there would have been a time during which burial in either a churchyard or non-churchyard cemetery was considered appropriate

(Cherryson 2008). Although it was more common for LAS cemeteries to be associated with a church (Hadley 2000; 2002; Buckberry 2010), many non-churchyard cemeteries were in active use into the 10th century (Hadley 2007). However, with the introduction of the first law referencing the use of consecrated burial ground, churchyards became the norm in terms of burial location in the 10th and 11th centuries (Blair 2005: 463-5).

3.4.2 Burial form

Burial form in the LAS period was variable, did not appear to be regulated by the Church (Hadley 2011), and was still utilised as a mechanism to display social identity (Hadley 2002; Buckberry 2007; Hadley 2009). Burial form can be divided into two categories: *grave type* and *grave variation* (Buckberry 2007). In general, burial form (including both grave type and variation) was much more variable at higher-status sites (Buckberry 2007). This probably does not indicate that all individuals in these cemeteries were of higher status, but that these churchyard cemeteries were in higher demand by individuals/families with higher social/economic status (Buckberry 2007). Therefore, the more elaborate mortuary treatment introduced by these individuals contributed to the increased variation observed in the higher-status cemeteries (Buckberry 2007).

Grave type involves the physical structure of the grave and commonly includes plain earth-cut burials, coffin burial (Figure 3.10), stone-lined burial (Figure 3.11), and sarcophagus burial, the latter two of which are less frequent. Earth-cut burials are the most common form of grave type found in the LAS period, although it is possible that many coffins or containers made of organic material may not have survived in the archaeological record (Buckberry 2007). It has been proposed that the increased desire to enclose the body in the LAS period (in coffins, stone-lined graves, and sarcophagi) can be attributed to changing views about death and dying, which resulted in an increased concern to protect the corpse from the ravages of decay (Thompson 2002; 2004).

Figure 3.10- A coffin burial from the 10th or 11th century from Swinegate, York. © York Archaeological Trust.

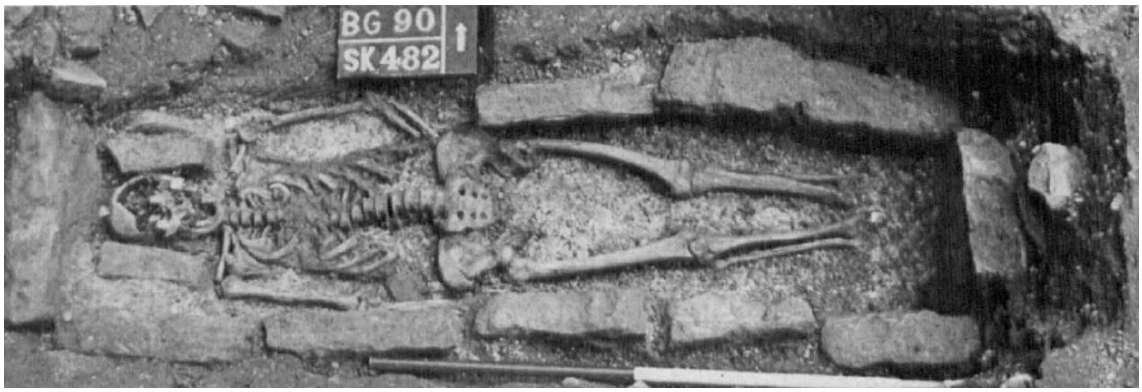

Figure 3.11- Stoned-lined grave of BLG-482 from the castle of Newcastle upon Tyne. Source: Unpublished archive held by the Department of Archaeology at the University of Sheffield. © John Nolan.

Grave variation involves what was included in the grave (apart from traditional grave goods). Examples of grave variation are the inclusion of stones placed next to certain areas of the body (Figure 3.12), charcoal or clay layers, grave markers (mounds of earth, wooden posts, plain/carved stone markers), and grave covers (plain or carved stone with simple or complex designs) (Buckberry 2007).

Stone inclusions commonly consisted of 1) stones placed on either side of the skull (earmuff stones), 2) stones placed beneath the skull (pillow stones), or 3) a group of three or more stones surrounding the entire skull (head cist) (Buckberry 2007). The inclusion of stones in a grave would have necessitated a certain procedure (i.e., placement of the stones in the grave, placement of the body in the grave, addition or re-arrangement of the stones), but would probably not have been particularly expensive (Thompson 2004: 122-3). Stone inclusion in LAS burial has been interpreted as a protective treatment that was meant to separate the corpse from the soil with a strong, durable object. The potentially protective nature of stone inclusion is supported by the fact that stones were usually placed near the parts of the body associated with breathing and the

senses (head and torso) (Thompson 2004: 123). The variety observed between sites with regards to stone inclusion supports the idea that different burial rites were considered appropriate among different communities (Thompson 2004: 122).

Figure 3.12- Pillow stone beneath the skull of PO-1039 from Priory Orchard, Surrey. Source: Unpublished archive held by Surrey County Archaeological Unit. © Surrey County Archaeological Unit (part of Surrey County Council). Not to be reproduced in any form without their explicit permission.

Charcoal, usually in layers under the body or coffin or packed around the sides of the coffin, is observed in many LAS cemeteries (Holloway 2008; 2010). The inclusion of charcoal in LAS burial has been interpreted in many ways, some of which are functional and others more symbolic (Holloway 2008; 2010). It is possible that charcoal was used to absorb bodily fluids (Ottaway 1982), to mark the location of a grave, or to prevent the body from decaying (Holloway 2010). It has also been proposed that charcoal may have been used to reflect a higher status (Fleming 1993). This is supported by the fact that cemeteries associated with high-status churches (e.g. Winchester Old Minster, Winchester New Minster, Gloucester Cathedral, York Minster, St. Oswald's Gloucester, and Durham Cathedral) had a higher percentage of charcoal burials, and because an association between charcoal and elaborate coffin fittings was observed at Winchester (Holloway 2008; 2010). In addition, the charcoal found in LAS charcoal burials is usually not from hearth residue and therefore had to be bought or made, which probably incurred some cost (Holloway 2010).

Other theories associate charcoal with ash, which is considered symbolic of penitence, humility, and cleanliness (Thompson 2004: 119; Hadley 2009), or propose that its inclusion was meant to make the deceased more comfortable in death (Holloway 2010). If charcoal was associated with penitence and humility, then was it a rite that was reserved for people who had not died "with decency" (Thompson 2004: 120), or was it meant to reflect the religious and penitential

identity of the deceased (Holloway 2010)? As with the inclusion of stones in burial, it is likely that the use of charcoal within the LAS funerary sphere was not a “nationally applicable grammar”, but instead, the reasons for its inclusion probably varied individually, locally, and regionally, and changed throughout time (Thompson 2004: 121).

3.4.3 Grave goods

The long-standing and pervasive belief that that conversion to Christianity resulted in the disappearance of grave goods (e.g. Hyslop 1963; Meaney and Hawkes 1970: 53-4) can no longer be fully supported (Morris 1983: 49-51), as there are many LAS individuals buried in churchyard cemeteries with associated items (Hadley 2009). Meaney and Hawkes (1970: 53-4) state that the gradual decrease of grave goods can be explained by the church’s disapproval of “pagan” grave goods and an increasing control over the mortuary treatment of the lay population. However Hadley (2009) and Welch (2011) argue that the marked decrease in grave goods was not due to an evolving negative attitude towards furnished “pagan” burials. Rather, with the adoption of Christianity, the inclusion of so many grave goods did not benefit the deceased, as they would be judged based on their actions in life rather than by the status evoked by grave furnishings (Morris 1983: 49; Hadley 2009; Welch 2011). Thus, LAS burials which contained grave goods should not be assumed to have negative or pagan connotations, but rather these burials should be considered socially and religiously appropriate alternatives to the typical unfurnished Christian burial.

While written contemporary sources indicate that most bodies were wrapped in a shroud for burial, the inclusion of specific artefacts suggests that some LAS individuals were buried clothed (Hadley 2009). Items that are found in LAS burials include strap-ends, hook tags, pins, buckles, Roman coins, and knives (Hadley 2009). Finger rings found in several LAS graves may have had amuletic functions or personally significant, mnemonic value to the deceased or their family (Hadley 2009). Some types of organic artefacts have also been discovered in LAS graves, including rods or wands of hazel or willow, which are sometimes interpreted as symbols of pilgrimage or resurrection (Hadley 2009).

White quartz pebbles are found in some LAS graves and potentially functioned as good luck charms or as tickets to the afterlife (Hadley 2009). In addition, the placement of these white quartz pebbles in the eyes and mouths of some individuals, areas associated with a priest's final blessing, suggests that these pebbles were included in some burials as part of a protective ritual (Hadley 2009). Thus, while there was a decline in the number and types of grave goods in the LAS period, they did not disappear altogether, and should therefore be considered infrequent but appropriate mortuary inclusions.

3.4.4 Burial location

The inception of the concept of consecrated ground in the 10th century and an increased emphasis on the spiritual and physical bounding of cemeteries (Gittos 2002), along with the establishment of execution cemeteries, which were reserved for individuals who did not deserve to be buried in a Christian cemetery, highlight the importance of physical proximity to the church in LAS burial (Hadley 2009). It has been proposed that burial closer to the church is probably a reflection of an individual's or family's higher status (Hadley 2009), or of a closer relationship with the church (Forbes 2013: 2). This is supported by the distribution of more elaborate grave forms at several LAS cemeteries: at Winchester Old and New Minsters, charcoal burials were usually close to or inside the minster buildings, and almost all the charcoal burials at St. Oswald's, Gloucester were near the church (Buckberry 2007). A burial with a grave cover at Raunds was located two metres from the church near the western door, and was surrounded by a dense cluster of additional burials, suggesting that adjacency to the church was highly desirable (Buckberry 2007). Finally, at Winchester Old Minster, sarcophagi and iron-bound coffins were more frequently found either inside or adjacent to the outside of the church (Buckberry 2007). Thus, it is reasonable to assume that the burial location of an individual was being utilised in the LAS period to reflect aspects of their or their family's identity or status (Buckberry 2007).

3.4.5 Sex and age

In general, there is no obvious association between grave form or grave good inclusion and age or sex (Hadley and Buckberry 2005; Buckberry 2007). In most cases, males, females, and non-adults could be afforded most mortuary rites, although more elaborate burial was more frequent with increasing age (Hadley and Buckberry 2005; Buckberry 2007). The apparent similarity in burial form between sexes and ages, along with a high portion of consecutive multiple burials which reference previous graves, have been attributed to a desire to signal familial connections in death (Hadley 2011).

Sex did not appear to influence burial location in most cemeteries, although at St. Mark's, Lincoln, males and females were more likely to be buried to the north and south of the church respectively, while at Raunds and Winchester Old Minster, males were more likely to be buried near the church (Buckberry 2007). Clustering of non-adults near church walls has been observed at several LAS cemeteries, including Tanners Row, West Yorkshire, Thwing, East Yorkshire, Spofforth, North Yorkshire, St. Peter's Church, Barton-upon-Humber, Raunds, Northamptonshire, Cherry Hinton, Cambridgeshire, Compton Bassett, Wiltshire, and Old Minster and Nunnaminster, Winchester (Hadley and Buckberry 2005; Craig-Atkins 2014). It is possible that those burying non-adults near church walls believed that they would be blessed by the rainwater dripping from the church eaves (Hadley and Buckberry 2005; Craig-Atkins 2014). However, clustering of non-adults does not occur in every LAS churchyard cemetery, and therefore it seems likely that the symbolism of these burial clusters varied between communities (Hadley and Buckberry 2005).

In summary, although mortuary treatment became more standardised in the LAS period, variation in cemetery and burial location, grave form, and grave inclusions persisted, and despite the increasing influence of the Church, it was still possible for "localised and individual traditions and beliefs to be expressed through the medium of burial" (Hadley and Buckberry 2005: 140). As in the earlier periods, individuals and their families probably utilised this mortuary variation to express certain aspects of identity or status, albeit within much more limited, socially-acceptable constraints (Buckberry 2007). The variation in funerary treatment in the LAS period can also be attributed to differences in local and

personal beliefs about what was considered acceptable burial provision (Hadley and Buckberry 2005), and therefore LAS cemeteries, as with the EAS and MAS cemeteries, must be analysed on a site-by-site basis.

3.5 Conclusions

As demonstrated in Sections 3.2 to 3.4, burial in Anglo-Saxon England was not uniform or static. From a retrospective vantage point, burial during this period of English history can be separated into three main phases: early, middle, and later. While these categories are certainly modern concepts, they are necessary to allow researchers to attempt to establish what was normative, non-normative, atypical, or deviant from the 5th to 11th centuries, and how burial varied throughout this 600 to 700-year period. This chapter's discussion of mortuary variability in the three distinct phases of the Anglo-Saxon funerary sphere allows informed interpretations regarding the funerary treatment of individuals with physical impairment in subsequent chapters.

Chapter 4- Methods

The following chapter outlines the overall project methodology beginning with how appropriate sites were identified and how a specific project strategy was determined. Next, standard osteological techniques for the macroscopic assessment of sex and estimation of age are outlined along with the methods utilised to identify and analyse individuals with physical impairment. Finally, the guidelines followed for consistent recording of funerary variables is provided.

4.1 Compiling a list of appropriate sites

There have been hundreds of Anglo-Saxon sites excavated in England, some of them consisting of isolated burials, others containing large cemeteries. The method by which Anglo-Saxon cemeteries were deemed appropriate for this researched is outlined below and visualised in Figure 4.1. Various gazetteers, including Meaney (1964), O'Brien (1999), Buckberry (2004), Cherryson (2005), Richardson (2005), and Reynolds (2009) were consulted to compile a relatively complete list of Anglo-Saxon burial sites, excluding isolated burials. To augment this database, the annual reports section of *Medieval Archaeology* and Historic England's online resource PastScape were consulted. The PastScape Advanced Search option was utilised to search for early medieval inhumation cemeteries in each of the counties of England. Finally, the appropriate Historic Environment Record officers from each of the counties were contacted by e-mail (using Historic England's online resource Heritage Gateway) to identify additional appropriate cemeteries that may have not been included online or any appropriate cemetery excavations that were recently finished. These searches identified more than 400 Anglo-Saxon burial sites consisting of more than one individual.

Because this research focuses on the burial treatment of individuals with physical impairment in Anglo-Saxon England, the burial populations had to be large enough so that the funerary treatment of individuals with and without physical impairment could be accurately compared. Thus, sites with isolated burials or smaller cemeteries were not considered. A minimum number of 50 individuals was chosen to provide a large enough sample size to accurately determine which funerary treatment rites were and were not normative within each burial population.

After a relatively complete database of Anglo-Saxon cemeteries containing 50 or more individuals was produced (N= *c.*160), site reports were located for each site that had one (N= *c.*90). It was necessary that the individuals examined be relatively well-preserved so that physical impairment could be identified osteologically. Consulting the site reports, the preservation of the bones at each site was assessed and recorded. Sites which had little to no bone recovery, sites with re-buried skeletal material such as Trowbridge, Wiltshire (pers comm. Jackie McKinley), or Blacknall Field, Wiltshire (pers comm Lisa Brown), or sites with very poor preservation of the excavated bones such as Cleatham, North Lincolnshire (Leahy 2007), or West Heslerton, North Yorkshire (Haughton and Powlesland 1999) were excluded.

The palaeopathology section was reviewed for each of the sites that had accessible bone reports and relatively good bone preservation to determine whether the site in question had evidence of potential physical impairment. Sites with no evidence of potential physical impairment were excluded from further analysis, resulting in around 70 sites with both relatively good bone preservation and evidence of physical impairment in at least one individual. Many pathological lesions commonly found in archaeological populations were ignored (e.g. periodontal disease, linear enamel hypoplasia, Schmorl's nodes, mild osteoarthritis), as these conditions were unlikely to have caused significant physical impairment in life.

To be considered potentially physically impaired, an individual had to have a visible deformity, a functional deformity (abnormal or restricted movement patterns), or a condition which, though perhaps not visible to others, caused physically impairing symptoms (malaise, fatigue, fever, etc.). Visible deformities do not necessarily affect normal movement and can be the result of congenital (e.g. cleft lip, severe torticollis) or acquired (e.g. sharp force trauma, infectious diseases) conditions. Similarly, functional deformities can be caused by congenital (e.g. developmental hip dysplasia, cerebral palsy) or acquired (e.g. traumatic injury, infectious diseases) conditions. In some cases, a functional deformity may not have been visibly obvious to the surrounding community but would still have restricted use of a particular limb (e.g. a non-visible traumatic alteration to the elbow joint could compromise normal movement of the arm). Some invisible conditions (e.g. metastatic carcinoma, hypertrophic

osteoarthropathy) did not result in noticeable osteological alterations in life, but their sequelae (e.g. severe bone pain, fatigue) would have made daily participation difficult, perhaps rendering the individual visibly or functionally distinctive. Examples of potential physical impairments identified in the various consulted bone reports include (but are not limited to) those mentioned in Table 4.1. See Section 4.4 for a discussion of how specific physical impairments were categorised with regards to visibility, functional restriction, duration of impairment, and impairment type.

Table 4.1- Examples of conditions identified in consulted bone reports as potentially physically impairing.

Type of physical impairment	Examples found in bone reports
Visible or functional deformity	- Mis-aligned leg/arm fracture - Limb shortening/asymmetry - Disuse atrophy - Joint deformation (traumatic/congenital/joint disease) - Abnormal joint fusion - Joint diseases - Scoliosis - Leprosy - Tuberculosis (kyphosis) - Osteomyelitis - Amputation - Cranial trauma/asymmetry - Severe osteoarthritis - Fibrous dysplasia - Osteosarcoma - Treponemal disease - Neuromuscular diseases (poliomyelitis, cerebral palsy, etc.) - Dwarfism
Invisible condition	- Deafness - Metastatic carcinoma - Multiple myeloma - Ankylosing spondylitis - Hypertrophic osteoarthropathy

While it is difficult to determine whether certain physical impairments would have been considered disabling in an Anglo-Saxon community (Section 2.4), if indeed, such a distinction existed in Anglo-Saxon society, this research focuses on individuals who were objectively different from the average human, thus making it *more likely* that they were considered disabled by themselves and/or

by their community. It must be noted that not all physical impairments manifest skeletally, particularly mental impairment. Just because an individual does not demonstrate skeletal evidence of physical impairment does not mean that they were not physically impaired in life (Sections 2.3.1 and 10.1.2). However, given the nature of the research, individuals with non-skeletal physical impairment could not be analysed and are not considered here.

Finally, attempts were made to locate the actual skeletal remains for the relatively well-preserved burial populations consisting of more than 50 individuals and at least one example of potential physical impairment. Contact was made with the various museums, archaeology companies, county councils, universities, and other institutions which held the skeletal remains to determine if access would be possible (N= *c.*50). If access was not possible, the site was excluded. Access request forms, letters of recommendation, and project outlines were provided when necessary.

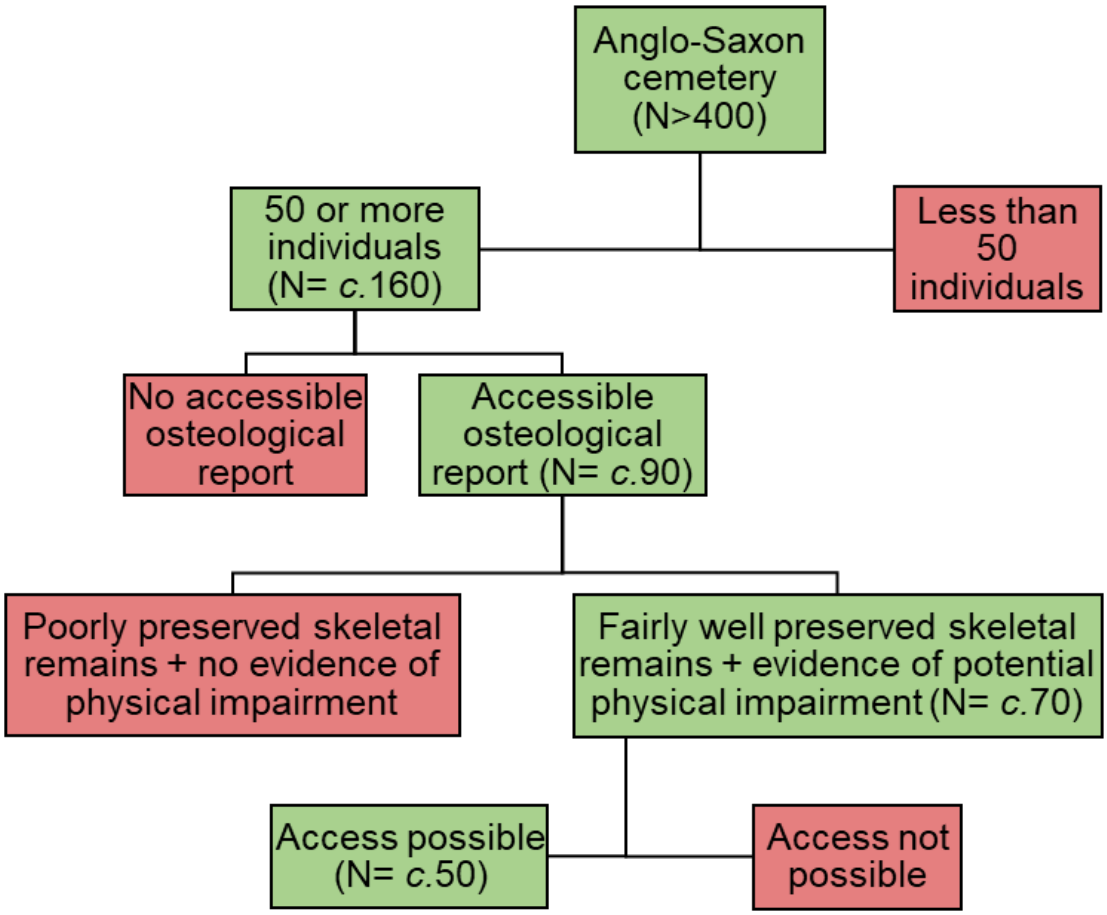

Figure 4.1- Flow chart diagram of the procedure utilised to identify potential sites for analysis.

Due to time and financial restraints, all 50 of the sites which were accessible could not be analysed. Preference for a particular site was based on a variety of factors including: 1) a large sample size, 2) more examples of potential physical impairment, 3) availability of consistent and reliable funerary data, 4) efficient and positive communication with the archive manager, 5) relatively straightforward access to the skeletons, and 6) the possibility of cost-effective travel, accommodation, and bench fees. The sites selected for analysis are discussed in Chapter 5.

4.2 Determining a project strategy

Many skeletal collections to which access could be arranged (N= *c.*50) were identified from the osteological reports as having some evidence of potential physical impairment in at least one individual. There were several factors that were considered when deciding *which* sites to analyse, *how many* sites should be analysed, and *how* they should be analysed.

1. As this research spans all Anglo-Saxon time periods (early, middle, and late) and geographical areas, it was preferable that the data collected include as many sites as possible so that multiple periods/locations were accurately represented. Regional and temporal variability is an integral aspect of funerary treatment in Anglo-Saxon England (Chapter 3), so including a large number of sites in the project would allow for a more informed and accurate representation of Anglo-Saxon mortuary rites across space and time.
2. As this research compares the funerary treatment of individuals with and without physical impairment, which can be influenced by both age and sex (Chapter 3), gathering the demographic and funerary data from the entire burial population at each site was necessary. Therefore, it would be ideal for the current author to perform both osteological (age, sex, palaeopathology) and funerary analysis on all individuals at each site.
3. Due to both time and financial constraints, an osteological analysis by the current author that included all individuals from a large number of Anglo-Saxon sites was not feasible.

It was necessary to formulate a strategy that stayed within the time and financial constraints of the project, while also allowing for the analysis of as many sites as possible and the collection of a large data set to allow for accurate statistical analyses. Osteological analysis of each individual in a population by the author was ideal for consistency, but this could only occur if a small number of sites was chosen (e.g. one EAS, one MAS, and one LAS site). However, funerary treatment was far from standard or uniform in any phase of Anglo-Saxon history, so limiting the project to the full and in-depth analysis of only three sites would be detrimental, as these three burial populations may not have been representative of the Anglo-Saxon population as a whole.

A second option was to pick more than three sites, select a large enough sample of the burial population from each site (N=100?), and do a full osteological and funerary analysis of each individual. Many sites from Anglo-Saxon England were not fully excavated (i.e., the curated burial population is only a portion of the entire burial population, the rest of which was destroyed or remains *in situ*). While this in itself was not ideal, it was even less ideal to select a sample of a population that was already incomplete.

A third option to allow for the analysis of the full burial population from a large number of sites was to utilise the data gathered from previously performed osteological analysis. While there are aspects of this method that are not ideal (e.g. relying on the consistency of someone else's data), it was more important to obtain a large sample size from a variety of burial populations within the time and financial constraints of the project. Therefore, this third project strategy was adopted. However, it was essential to determine whether the previous osteological analysis was reliable and consistent enough for use in this research.

Thus, for each site, a random sample of 30 individuals was selected utilising the RANDBETWEEN function in Microsoft Excel 2016. These individuals were assessed for sex and age by the current author, and this data was compared statistically to the sex and age data provided by previous researchers. Palaeopathological analysis performed by the current author was compared qualitatively to the palaeopathological analysis provided by previous researchers. The methods utilised to compare the current and previous osteological analyses are outlined in Sections 4.3.4 and 4.3.5 below.

4.3 Testing consistency of previous osteological analysis

4.3.1 Sex assessment

The current author performed sex assessment of the adults from the random sample of 30 individuals following methods utilising the morphology of the pelvis (Phenice 1969; Buikstra and Ubelaker 1994) and skull (Williams and Rogers 2006; Walker 2008), and metrical analysis (Bass 2005). The most weight was given to methods utilising the pelvis, as it is considered the best indicator of sex due to the sexually dimorphic evolutionary adaptations to its shape (Mays and Cox 2000; Moore 2013). Bass's (2005) method, which measures various aspects of the clavicle, scapula, humerus, and femur, was developed on modern White and Black American populations, and thus was only used to corroborate the sex assessments provided by the pelvis and skull, or to produce a possible sex assessment for very incomplete remains. It should be noted that, excluding some morphological aspects of the pelvis, sexually dimorphic osteological traits are population-specific, and therefore researchers must be aware of the range of variability within the population they are studying (Buikstra and Ubelaker 1994: 16). Many Anglo-Saxon females who could be assessed for sex utilising the pubic symphysis also had features of the skull that were somewhat "male". Therefore, it was important to consider that some osteological traits normally utilised for more confident sex assessment in some archaeological populations were indeterminate for many Anglo-Saxon individuals.

Combining the above methods, each adult from the random sample of 30 individuals was categorised as male/female (M/F), probable male/female (M?/F?), possible male/female (M??/F??), or unsexed (US). It should be noted that because the current author did not osteologically analyse the entire population, a distinction was not made between individuals who were unsexed due to poor preservation/completeness, and individuals who were unsexed due to a lack of sexually dimorphic traits.

The non-adult individuals from the random sample of 30 individuals were not assessed for sex, as techniques designed to do so have consistently found low accuracy levels or a lack of sexual dimorphism (Mittler and Sheridan 1992; Holcomb and Konigsberg 1995; Sutter 2003; Franklin et al. 2007; Vlak et al. 2008; Buckberry 2018).

4.3.2 Age estimation

Adult age was estimated in the random sample of 30 individuals by the current author utilising the pubic symphysis, auricular surface, cranial sutures, and dental attrition. Methods that required well-preserved elements (e.g. a complete pubic symphysis) (Meindl and Lovejoy 1985; Brooks and Suchey 1990; Buckberry and Chamberlain 2002) were not utilised, as many of the individuals analysed were incomplete and fragmented, and these methods tend to reflect the age structure of the sample population (Buckberry 2015). To allow for consistent age estimation across the different sites analysed, transition analysis was deemed appropriate (Boldsen et al. 2002). This method takes into account age data from the pubic symphysis, auricular surface, and cranial sutures, and can be used on fragmented remains. It also uses Bayesian techniques which remove the influence of the reference population's age structure on maximum likelihood values, and provides individual-specific age estimates (Boldsen et al. 2002). Brothwell's (1981) method, which analyses molar attrition rates and is argued to be suitable for British populations from the Neolithic to Medieval periods, was utilised alongside transition analysis, as in some cases, only the teeth were available for age estimation.

While age is most accurately expressed as an individual-specific range (Buckberry 2015), for the purposes of comparison and statistical analysis, all adult individuals in the random sample of 30 individuals were placed within one of four age groups. These groups are based on approximate age ranges, as determining the exact age of an adult archaeological individual is virtually impossible. The four age groups are as follows:

- Young adult (YA) (*c.*18-25 years)
- Middle adult (MA) (*c.*26-49 years)
- Older adult (OA) (*c.*50+ years)
- Unaged adult (Adult) (*c*.18+ years)

Non-adult age in the random sample of 30 individuals was estimated by the current author utilising methods that examine dental development and eruption (AlQahtani et al. 2010), long bone length (Scheuer and Black 2000), and the state of epiphyseal fusion (Scheuer and Black 2000). The most weight was given to dental age estimation techniques as teeth continuously grow throughout

the period of juvenile development, and, unlike the long bones (Dreizen et al. 1967; Scheuer and Black 2000), the eruption pattern and timing are less affected by malnutrition (Elamin and Liversidge 2013). Each non-adult individual in the random sample of 30 individuals was placed into one of the following age groups:

- Foetus (FE) (under 40 weeks)
- Infant (IN) (birth-12 months)
- Younger child (YC) (1-6 years)
- Older child (OC) (7-12 years)
- Adolescent (ADO) (13-17 years)
- Unaged non-adult (Non-adult) (0-17 years)

Individuals in the random sample of 30 for which adult or non-adult status could not be confirmed were recorded as unaged (UA).

4.3.3 Palaeopathology

Each individual in the randomly selected sample of 30 individuals was analysed for pathological lesions by the current author. Each lesion was briefly described following the procedure laid out in Roberts and Connell (2004), which details a standardised method for the recording of palaeopathological lesions.

4.3.4 Comparison of data sets: age and sex

The age and sex data collected by the current author for the sub-sample of 30 randomly selected individuals was compared to the extant age and sex data provided by previous researchers. As the sample populations were previously analysed by different researchers utilising many different methods, the sex and age categories which were previously recorded varied. In most cases, adaptation of the previous researcher's data and the current author's data was necessary to allow for statistical comparison between the two data sets. The adaptations performed for each burial population are provided in more detail in Appendix 1.

Cohen's weighted kappa test can be utilised to test the level of agreement between two observers measuring ordinal data. This test assigns weight to different categories of data, with less weight given to agreement between

categories that are further apart (Viera and Garrett 2005). This is particularly applicable to comparison of age and sex data: the difference between a middle adult and an older adult is not as large as the difference between a young adult and an older adult, just as the difference between a possible male and probable male is not as drastic as the difference between a probable female and a probable male.

For each of the 30 randomly selected individuals at each site, the age and sex data from the current author and previous researchers were assigned numerical values. The numerical values assigned represent the sex assessment and age estimation spectrums generally used by osteologists as demonstrated in Figure 4.2.

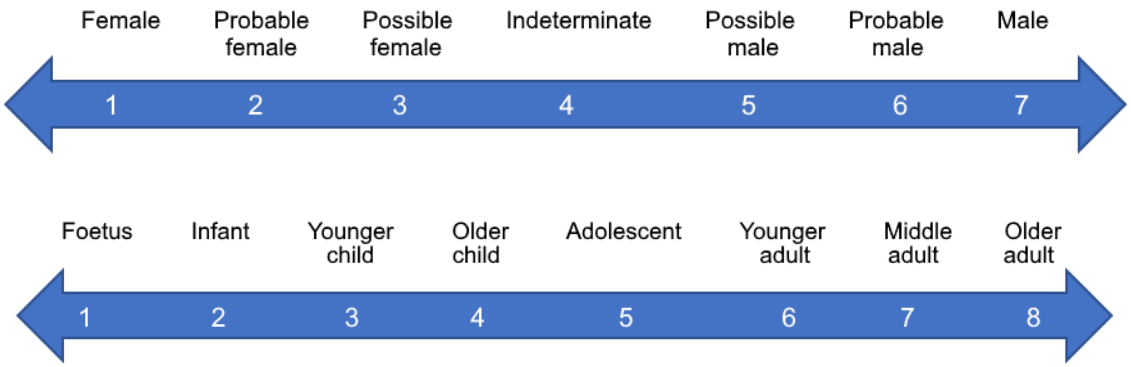

Figure 4.2- General age/sex spectrums utilised by osteologists which were adapted for age/sex data coding in this research.

For each site, the numerical sex and age data provided by the previous researcher was compared to the numerical sex and age data gathered by the current author utilising Statistical Package for the Social Sciences v.25 (SPSS) with the STATS_WEIGHTED_KAPPA extension v.1.2.1 (Cohen's weighted kappa test). It should be noted that, as it is extremely difficult to assess the sex of non-adult skeletal remains (Section 4.3.1), non-adults were excluded from Cohen's weighted kappa tests for sex. An individual was not included in the Cohen's weighted kappa tests for sex if the current author and previous researchers did not agree on whether the individual was an adult or a non-adult (i.e., an adolescent or a young adult), which did not happen often. In addition, as it was impossible to linearly code those individuals who had been classified as unaged adults, unaged non-adults, or unaged individuals, they were excluded from the Cohen's weighted kappa tests for age.

For each site, the kappa value (κ) was provided for the sex data comparison and the age data comparison. The interpretations for κ values are provided in Table 4.2 following Viera and Garrett (2005).

Table 4.2- Weighted κ values and corresponding degrees of agreement. Source: Viera and Garrett (2005).

κ value	Agreement
<0	Less than chance agreement
0.01-0.20	Slight agreement
0.21-0.40	Fair agreement
0.41-0.60	Moderate agreement
0.61-0.80	Substantial agreement
0.81-0.99	Almost perfect agreement

Sites for which there was substantial or almost perfect agreement between the current and previous researchers with regards to sex assessment and age estimation were not re-analysed by the current author. Sites for which there was moderate agreement between the current and previous researchers with regards to sex assessment and age estimation were not re-analysed by the current author, but are discussed in more detail in Section 6.1. Only one site (Norton East Mill) had less than moderate agreement between the current author and previous researchers with regards to sex assessment. The entire population was re-analysed by the current author for both sex assessment and age estimation utilising the methods outlined in Sections 4.3.1 and 4.3.2.

4.3.5 Comparison of data sets: palaeopathology

A subjective comparison of the previous researcher's and the current author's palaeopathological analyses of the randomly selected sample of 30 individuals was performed. This allowed the current author to determine if previous recording of palaeopathological data was sufficient, and if cases of potential impairment had been missed. The qualitative comparison between the current author's and previous researcher's palaeopathological analyses is provided in more detail in Appendix 3.

4.4 Osteological analysis of physical impairment

As previously mentioned, each burial population was chosen for this research because previously published or unpublished work recorded the presence of at least one individual who may have been physically impaired (Section 4.1). Each of the individuals described in the previous work and determined to be potentially physically impaired by the current author were fully analysed by the current author following the methods outlined in Sections 4.3.1 to 4.3.3.

Detailed photographs were taken of all relevant lesions and alterations (accompanied by a standard ten-centimetre scale) with a Sony DSC-HX60V digital camera from several angles. Typed descriptions were recorded as well. When necessary (and if possible), photographs were taken of articulated elements when more than one element was involved, or if an alteration caused abnormal angulation of a joint. When necessary, metrical assessment was performed utilising a Mitutoyo Absolute Digimatic digital caliper (to 0.1mm) for smaller measurements, and a Paleo-Tech Concepts field osteometric board for larger measurements (to 1mm).

After descriptions and photographs were recorded, the condition(s) observed in each individual were differentially diagnosed utilising both palaeopathological and modern clinical literature. While a final diagnosis was attempted, this was not always possible. Modern clinical literature was utilised to investigate how specific lesions or alterations would have impacted daily functioning, even if a diagnosis could not be determined (e.g. the cause of lower limb paraplegia was unclear, but the functional impact of this could be investigated).

It should be noted that if an individual had some sort of pathological alteration that might have been physically impairing, they were classified as “physically impaired”. The severity of the physical impairment did not affect this classification: an individual with restricted forearm pronation and an individual with quadriplegia were both considered “physically impaired”, even if the severity of the clinical sequelae varied. In addition, individuals for which no skeletal physical impairment was identified were classified as “not physically impaired”. It is possible that individuals who were identified as “not physically impaired” were

actually impaired in life, but these individuals could not be considered due to the nature of archaeological remains (Sections 4.1 and 10.1.2).

In order to investigate whether certain types of impairment led to differential treatment in death, and to explore the temporal distribution of specific condition types, each individual with physical impairment was categorised based on 1) the presence of visible deformity, 2) the presence of functional impairment or movement restriction, 3) the duration of their physical impairment, and 4) impairment type.

4.4.1 Visible deformity or difference

Individuals were classified as either having or not having a visible deformity. Individuals with a visible deformity could have 1) bony alterations that resulted in an obvious, distinguishing abnormality in their external appearance that would have been easily noticeable to the surrounding community, or 2) a condition or injury which probably caused soft tissue damage in a part of the body that would not usually be hidden by clothing. For example, a femoral fracture which caused angulation and shortening of the entire bone would be noticeable, as the individual would have a shortened leg held at an abnormal angle (even when not walking). While a traumatic injury to the face or lepromatous rhinomaxillary syndrome might not cause such drastic bony alterations, the soft tissue changes (e.g. significant scarring, asymmetry, extrusion of bodily fluids from nose and mouth) *would* be noticeable to the surrounding community and could not easily be covered up by clothing.

Individuals who did not have soft tissue alterations (that could be reasonably assumed based on skeletal alterations) or skeletal alterations consistent with visible deformity were classified as not having a visible deformity. Many individuals who had quite extensive dry bone changes that were obvious osteologically were not considered visibly deformed. For example, ankylosis of the radius and ulna in a pronated position would be very noticeable during macroscopic palaeopathological analysis, but would probably not be noticeable in life if the arm was held at rest. However, note that although such an individual would not have a visible deformity, the inability to supinate would cause altered

arm and hand movements, which *could* be noticeable by the surrounding community (see below).

4.4.2 Functional restriction or movement limitations

Individuals were classified as either having or not having functional restrictions or limited, altered, or painful movement. Functional restriction or limited movement could result from a variety of conditions. Any condition or injury that caused considerable contour change or angulation that might impede movement of a joint (shoulder, elbow, wrist, hip, knee, or ankle) was included in this category. Only cases of severe osteoarthritis with evidence of osteophyte formation that would have impinged on a joint were included. Any conditions or injuries that caused considerable shortening, atrophy, or angulation of a long bone were also considered, as these would disrupt normal movement patterns of the limb. Alterations in the spine such as lumbar kyphosis or tuberculous kyphosis (along with being visibly deforming) could cause an altered gait due to the abnormal posture of the spine. Finally, conditions that may not have necessarily caused abnormal movement as a result of skeletal alterations, but would have caused malaise, fatigue, general unwellness, or pain (e.g. metastatic carcinoma, hypertrophic osteoarthropathy, osteomyelitis) were included in this category. Individuals living with severe amounts of fatigue and pain are unlikely to move around as much as the average individual, and therefore can be considered functionally restricted or limited in movement.

4.4.3 Duration

Estimating how long an individual lived with their physical impairment was challenging, as estimating an accurate timescale based only on the nature of remodelled bone is complex and not always possible. For example, the complete capping of the exposed medullary cavity in an amputation can occur after several months (de Boer et al. 2015), and therefore an individual who had lived with an amputated limb for less than a year might appear similar osteologically to an individual who had lived with an amputation for most of their life. Similarly, the smoothing of a callus caused by a fracture can occur after two to three months, solid unification of a fracture area can occur after a few weeks to a few months

(Lovell 1997), while full healing can occur after one to two years (de Boer et al. 2015). Therefore, again, an individual who lived with a fractured femur which caused an abnormal gait and functional restriction for only one year of their life, might appear similar osteologically to an individual who had lived with this impairment for years. An attempt was made to establish how long each individual lived with their impairment utilising the categories described in Table 4.3.

Table 4.3- Descriptions of duration categories utilised for analysis.

Duration category	Description
End of life	1. Porous, reactive bone present with little sign of transition to smoother, remodelled bone 2. Partial or total fixation of a joint with no ankylosis or atrophy of the involved bone/s→ indicates the joint was not fixed for long enough for the associated limb to be affected 3. Conditions that only affected individuals towards the end of their life (e.g. metastatic carcinoma)
Acquired: medium to long term	1. For conditions which *may* have been acquired in childhood but could not be definitively categorised as such (e.g. kyphosis caused by tuberculosis could have manifested in childhood, but may also have developed in adulthood) 2. Evidence of bony remodelling and healing suggestive of having lived with a condition for some time for which a more specific duration could not be determined
Acquired: definitively long term	1. Individuals who had shortening of a long bone consistent with fracture and arrested growth in childhood 2. For conditions causing significant skeletal alterations that probably would have taken a long time to develop
Congenital	1. Conditions which could definitively be identified as congenital (present at birth)

It should be noted that only individuals for which a condition could be definitively defined as congenital were included in the congenital category. Therefore, individuals with a condition that may or may not have been congenital (e.g. paralysis of the lower limbs may have been a result of a congenital condition such as cerebral palsy or acquired by a condition such as poliomyelitis, traumatic injury, or stroke), were included in the long-term acquired category.

4.4.4 Impairment type

The individuals with physical impairment were categorised by condition or disease type based on the most probable differential diagnosis. Many individuals had conditions that could not be confidently diagnosed. As mentioned above,

atrophy and bone shortening as a result of paralysis can be caused by various conditions. Joint fixation was observed in many cases, but the cause (e.g. traumatic injury, joint disease, non-specific infection) could not be confirmed. Therefore, many of the categories utilised to describe impairment type were purposely vague so that they could include individuals for which a specific diagnosis was not possible. If an individual had two related or unrelated conditions, like tuberculosis and leprosy, or trauma and osteomyelitis, they were included in both categories which allowed for a more comprehensive analysis of impairment type in the sample. The impairment types utilised in this research include the following: trauma, joint fixation (partial/full), tuberculosis, leprosy, osteomyelitis, non-specific inflammation or infection, hypertrophic osteoarthropathy, joint disease, paralysis, neoplastic disease, soft tissue formation, congenital condition, scoliosis, and unclear.

4.5 Recording of funerary context

The funerary context of each individual from each burial population was gathered from various sources, including published monographs, and unpublished Excel spreadsheets, reports, and excavation archives. Grave location was provided for all sites by digital or hand-drawn excavation plans. The funerary variables which could be recorded varied widely between sites, and because different researchers were performing the funerary analysis, the descriptions of some variables (e.g. body or limb positioning) were inconsistent between the sites. Therefore, a consistent recording methodology was produced by the current author to allow for accurate comparison between sites. In many cases, the funerary data recorded by the previous researchers did not match the funerary data gathered by the current author, which occurred when the definitions of specific funerary variable categories varied. For example, at Norton East Mill, several individuals who were not originally recorded as prone by previous researchers were recorded as prone by the current author. The methods of recording for the main categories of funerary treatment variables are described below.

4.5.1 Grave orientation

Grave orientation was provided either as a degree orientation (e.g. 270°), an orientation group (e.g. W-E), or both. For this research, grave orientation was recorded in the head-feet format. Orientation was sometimes reported previously in a feet-head format or the degree orientation of the foot side of the grave was provided. In these cases, the orientation group or degree were adjusted by the current author to fit a head-feet format (e.g. S-N was changed to N-S, or 90° was changed to 270°).

Individuals for which a degree value was provided were placed into one of the following groups demonstrated in Figure 4.3 and described in Table 4.4 by the current author. For some sites (e.g. Apple Down), only a grave orientation group was provided (e.g. W-E or N-S) rather than a degree orientation value. It is unlikely that all the graves at Apple Down were at exactly these orientations, but as the degree values were not provided, the orientation groups as previously reported were used.

It should be noted that some of the orientation groups are likely to consist of fewer individuals than others because their degree range included only one-degree value (e.g. E-W was only used for 90°). Therefore, in a sample of 100 individuals for which 49 were WNW-ESE, 49 were WSW-ENE, and two were W-E, the W-E orientation would appear, but should not be considered, non-normative, as all the graves were generally oriented W-E.

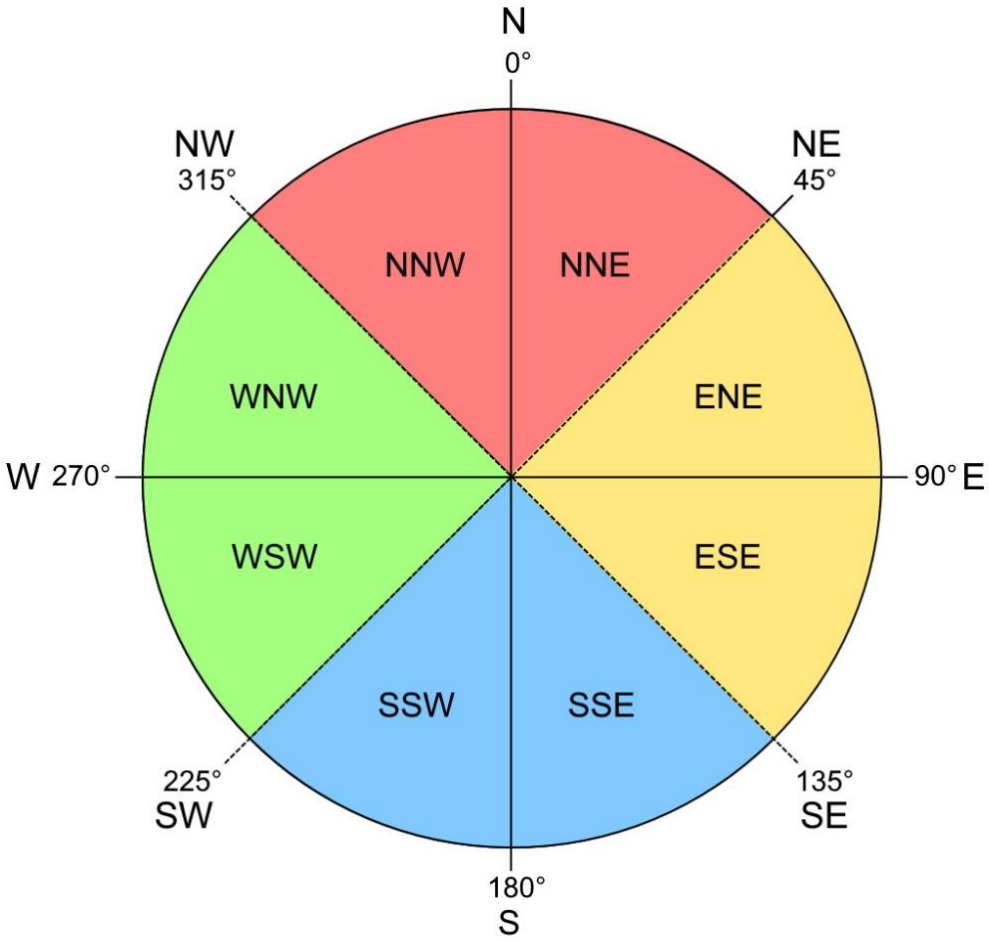

Figure 4.3- Visual demonstration of the orientation groups and corresponding degree orientation values utilised in this research. NB: Red= generally N-S; yellow= generally E-W; blue= generally S-N; green= generally W-E.

Table 4.4- Grave orientation groups and corresponding degree value ranges utilised in this research.

Orientation group (head-feet)	Degree range (°)
NNW-SSE	316-359
N-S	0/360
NNE-SSW	1-44
NE-SW	45
ENE-WSW	46-89
W-E	90
ESE-WNW	91-134
SE-NW	135
SSE-NNW	136-179
S-N	180
SSW-NNE	181-224
SW-NE	225
WSW-ENE	226-269
W-E	270
WNW-ESE	271-314
NW-SE	315

4.5.2 Body orientation and position

In most cases, body and limb positioning was determined from *in situ* excavation photographs, detailed grave drawings, or more basic line diagrams. Several previous researchers recorded body position simply as extended, flexed, crouched, or prone. This method does not always mention to which side an individual was flexed or crouched (right or left) or consider the position of the body of individuals who were prone. Therefore, the current author recorded body orientation (supine, prone, right/left side) and body position (extended, flexed, crouched) (Parker Pearson 1999: 202) as separate variables. This method allows more detail to be recorded about the positioning of the body (e.g. a prone burial can also be flexed, or an extended burial can also be on the right side). The body orientations and body positions are described in Table 4.5 and Table 4.6 and were applied consistently within and between sites.

Table 4.5- Descriptions of the body orientation categories utilised in this research. Source: Parker Pearson (1999: 202), descriptions modified by current author.

Category	Description
Supine	- Individual lying on back of body - Shoulders and hips on generally horizontal planes relative to the ground surface, but allowing for some slight rotation
Right/left side	- Individual lying on the right/left side of body - Shoulders and hips not on horizontal planes relative to the ground surface
Prone	- Individual lying on front of body - Shoulders and hips on generally horizontal planes relative to the surface, keeping in mind that some twisting may occur to accommodate the arms and legs which cannot lie flat as in supine orientation
Other	- Individuals who did not fit one of the three previous categories (e.g. body propped against the grave wall, torso is rotated but lower half of body is not)

Table 4.6- Descriptions of the body position categories utilised in this research. Source: Parker Pearson (1999: 202), descriptions modified by current author.

Category	Description
Extended	- No obvious bend in the body→ a generally straight line can be drawn between the skull, hips, and feet - An extended body can be on the right or left side as long as the straight line between the skull, hips, and feet is maintained
Flexed	- Obvious bend in the body with both legs flexed at an angle between 91°-179° - If one leg is bent at an angle slightly less than 90° and the other is bent at an angle slightly more than 90°, the individual can be recorded as flexed - In many cases flexed individuals are also buried on their right/left side, but supine individuals with the shoulders/hips on a horizontal plane relative to the ground can also be flexed
Crouched	- Obvious bend in the body with both legs bent at an angle less than 90° - Almost all crouched individuals are buried on right/left side but supine individuals with shoulders/hips on horizontal plane relative to the ground can also be crouched
Other	- Individuals who did not fit one of the three previous categories (e.g. one leg is severely bent and the other is not)

4.5.3 Head and limb positioning

Head and limb positioning were also determined from *in situ* excavation photographs, detailed grave drawings, or more basic line diagrams. The head and limb position categories as defined by the current author are described in Table 4.7 to Table 4.9, and were applied consistently within and between sites. It should be noted that there may be an over-exaggeration of the number of right/left facing skulls: some skulls which originally were placed forward or upright facing may have fallen to the right or left due to decay over time (Duday 2009: 17-9).

Table 4.7- Descriptions of the head position categories utilised in this research.

Category	Description
Forward facing	- Eyeline generally facing forward (towards toes), chin usually resting on chest - This includes individuals with the skull slightly tilted if eyeline is still generally facing forward (towards toes)
Upright facing	- Eyeline generally facing vertically, chin not resting on chest
Right/left facing	- Eyeline facing right or left - In most cases only the right or left side of the skull visible when looking down on the individual
Other	- Individuals who did not fit one of the three previous categories - In some cases, “other” head positions were given their own label (e.g. downward facing) if the same position occurred multiple times in a cemetery

Table 4.8- Descriptions of the arm position categories utilised in this research.

Category	Description
Extended	- No obvious bend at the elbow joints - Both arms straight at sides or on top of the body
Both arms bent	- Obvious bend at both right/left elbow joints - Arms can be bent over the body at different levels (e.g. waist, abdomen, chest) or arms can be bent away from the body (not resting on top of it)
Right arm straight, left arm bent	- No obvious bend at right elbow joint (arm can be at side or on top of body) - Obvious bend at left elbow joint (left arm can be bent across body at different levels or bent away from the body)
Left arm straight, right arm bent	- No obvious bend at left elbow joint (arm can be at side or on top of body) - Obvious bend at right elbow joint (right arm can be bent across body at different levels or bent away from the body)
Other	- Individuals who did not fit one of the four previous categories

Table 4.9- Descriptions of the leg position categories utilised in this research.

Category	Description
Extended	- No obvious bend at the knee joints→ legs straight and parallel to one another - Very slight bending included as extended→ e.g. when knees bent slightly inward because body was probably wrapped in a shroud - Knees and ankles can be together or apart
Both legs bent right/left	- Obvious bend at knee joints→ both legs bent to the right or left - Legs can be parallel, or one may cross the other; usually the angle of bending is similar in the right and left legs
Right leg straight, left leg bent	- No obvious bend in right knee joint - Obvious bend in left knee joint→ left leg can be bent outwards or inwards and may cross the right leg
Left leg straight, right leg bent	- No obvious bend in left knee joint - Obvious bend in right knee joint→ right leg can be bent outwards or inwards and may cross the left leg
Other	- Individuals who did not fit one of the four previous categories - In some cases, “other” leg positions were given their own label (e.g. both legs bent outward) if the same position occurred multiple times in a cemetery

4.5.4 Multiple burial

Burials involving multiple individuals can be described by several terms including horizontal (individuals lay next to one another at similar depths), vertical (one individual lays on top of the other), contemporary (burial occurred at the same time), or consecutive (one burial occurred some time after the other) (Wilson 1992: 71-72; Stoodley 2002) (Section 3.2.5). In most cases encountered in this research, contemporary burials were horizontal, and consecutive burials

were vertical, but this was not always the case (e.g. the contemporary burial of a non-adult laid on top of an adult). In some cases, a secondary burial was clearly inserted but it was difficult to determine whether this was intentional or accidental. These types of burials were considered multiple in this research, which may have exaggerated the frequency of multiple burials at some sites.

Unfortunately, due to the varying levels of description, the classification of all multiple burials in the sample was not possible. Some previous researchers simply stated that there were two individuals in the same burial, but provided no notes as to whether they were buried at the same or different times. Therefore, multiple burials were noted and recorded as horizontal/vertical and contemporary/consecutive when possible.

4.5.5 Grave inclusions, furniture, and structure

The funerary treatment which was recorded by previous researchers with regards to grave inclusions, furniture, and structure varied widely between sites. The variables encountered in this research that were recorded as grave inclusions, furniture, and structures are provided in Table 4.10.

Table 4.10- Variables included as grave inclusions, furniture, and structures in this research.

Category	Variables included
Grave inclusions	- Stones/flints (single pieces) - Charcoal/ash - Chalk - Charnel (disarticulated bone) - Clay
Grave furniture	- Coffins, sarcophagi - Other wooden furniture (planks, boards, etc.) - Stones→ at the sides of the skull (earmuffs), beneath the skull (pillow stones), behind the skull, enclosing the skull (head cist)
Structure	- Grave shape - Weathering - Ledges/shelves - Stone lining - Above ground timber structure - Marker posts/grave marker - Ring ditch + mound - Stone tumulus - Alignment with Iron Age features

4.5.6 Grave goods

For all graves (most importantly for the EAS burials), all grave goods found in association with an individual were recorded, and specific grave good types (e.g. brooch, spear) were recorded as present or absent. The percentage of graves in which a specific grave good was present was calculated, along with the total number of that grave good present in the entire cemetery, as many graves contained multiples of the same item (e.g. knives, brooches, beads).

In general, burials in EAS cemeteries can be divided into four main types with regards to grave goods: burials with weapons (often associated with males), burials with jewellery (often associated with females), burials with other types of grave goods that are neither weapons nor jewellery, and burials without grave goods (Lucy 1997) (See Sections 3.2.6.3 and 3.2.6.4 for further discussion regarding the social context of these burial types). The guidelines described in Stoodley (1997; 1999), who investigated the sex association of specific grave good types in 46 EAS cemeteries including 3,401 individuals, and Lucy (1998), who looked specifically at EAS cemeteries in East Yorkshire were considered (Table 4.11). The individuals in the EAS cemeteries (and some MAS cemeteries) were placed into one of these four groups by the current author.

Table 4.11- Guidelines for grave type classification utilised in this research.

Source	Weapons burials	Jewellery burials	Other burials
Lucy (1998: 41)	- Spears - Shields - Swords	- Brooches - Bead strings - Pendants - Sleeve clasps - Waist ornaments (girdle-hangers, latch-lifters, girdle rings)	- Individual beads - Knives - Buckles - Belt-fittings - Vessels - Animal bones - Pottery - Tweezers
Stoodley (1997; 1999: 50-65)	- Spears - Shields - Swords - Seaxes - Axes	- Brooches - Beads - Pendants - Sleeve clasps - Necklaces - Pendants - Bracelets - Girdle items	- Buckles - Pottery - Glass/bronze vessels - Buckets - Knives - Combs - Firesteels - Toilet items (tweezers, ear scoops, brushes)

Some difficulties were encountered when categorising the grave good assemblages. Usually evidence of weaponry was obvious, but there were several cases where an individual was buried with smaller items that potentially belonged to a weapon (e.g. shield studs, ferrule, socket, scabbard mount). If the previous researcher mentioned a smaller, less diagnostic object in association with the larger weapon, a weapon was considered present in the grave. Similarly, there were some difficulties identifying types of jewellery. If the previous researcher labelled an object as possibly part of piece of jewellery (e.g. possible earring, pierced coin possibly part of a necklace), the grave was categorised as a jewellery burial.

Pins were used in EAS cemeteries to fasten veils/headbands, hair, and clothing (Ross 1991). Lucy (1998) does not include pins as diagnostic of jewellery burials, and while Stoodley (1997; 1999) found that 80% of pins are found in female graves, he does not include pins as part of the "female kit". Ross (1991) found that a majority of pins were associated with female burials but notes that if sexing of the individual was performed utilising grave goods when osteological analysis was not possible, which is now a discouraged and subjective method (Lucy 2011), he did not record a grave as female if only a pin was present. As such, grave good assemblages including a pin, but no other items associated with a jewellery burial, were not recorded as jewellery burials in this research.

Girdle-hangers or girdle items were included by both Lucy (1998) and Stoodley (1997; 1999) as characteristic of a jewellery assemblage. In many cases, the term girdle-hanger is used improperly, inconsistently, or interchangeably with other terms, including T-key, E-key, or latchlifter (Felder 2014). A chatelaine is defined as "one or more chains or rings hanging from the waist and carrying a collection of objects" (Geake 1997: 57). If girdle items are suspended in such a way, the combination can be considered a chatelaine, of which a girdle-hanger can be a part (Felder 2014). Therefore, girdle-hangers and girdle items are not described or categorised consistently throughout EAS site reports and monographs, but it is beyond the scope of this research to provide more consistent labels. Therefore, the labelling and categorisation provided by previous researchers is utilised. When an object or groups of objects were labelled as girdle-hangers, chatelaines, or latchlifters, they were considered indicative of a jewellery burial.

Usually no items of weaponry were found in jewellery burials, and no items of jewellery were found in weapons burials (Lucy 1998: 41). However, in a very few cases, an item of jewellery was found in a grave that also had items of weaponry; in these cases, the grave was categorised as a weapons burial.

It is important to mention that the absence of organic artefacts identified in Anglo-Saxon burials (e.g. timber for coffins, wood for weapon/tool handles, cloth, textiles, charcoal, food, plants) does not necessarily mean that organic grave goods were absent when burial took place. Although archaeologists cannot identify disintegrated organic items, it should be considered that some Anglo-Saxon individuals may have been buried with more grave goods that are no longer available for analysis.

It should also be noted that only grave goods which could be confidently identified and were discussed by previous researchers were included, as it is beyond the scope of this research to investigate the smaller, unidentifiable objects (e.g. iron fragment, strap end, copper sheet, stud). Individuals buried with only unidentifiable objects were recorded as having grave goods present, but the percentages of these objects were not calculated.

This chapter has 1) summarised the process for identifying appropriate cemetery sites for analysis, 2) described the osteological methods utilised for the analysis of age, sex, and palaeopathology, 3) explained how the current author's osteological data was statistically and qualitatively compared to a sub-sample of extant osteological data for each site, 4) defined how specific physical impairments were categorised for later analysis, and 5) discussed how funerary data was recorded. The next chapter will provide the relevant excavation, dating, and phasing information for each of the 19 Anglo-Saxon sites included in this research.

Chapter 5- Materials

5.1 Introduction

The following chapter briefly discusses the relevant information regarding the Anglo-Saxon cemeteries included in this research. This includes the location of the cemetery, who excavated it, when and under what circumstances it was excavated (which provide a general indication of the quality of recorded data), phasing information when necessary, the number of individuals excavated, and the methods used to date the site.

A total of 19 Anglo-Saxon cemetery populations were included in this research: nine EAS, five MAS, and five LAS. To be included in this research, a site had to meet several criteria which are described in Section 4.1. A brief summary of each site is provided in Table 5.1, and the location of each site is demonstrated in Figure 5.1. As furnished Anglo-Saxon cemeteries tend to be located in the eastern half of the country (east of a line between Dorset and Sunderland), with a high concentration on the eastern coast and Upper Thames Valley, (Higham and Ryan 2013: 80), most of the included cemetery populations came from these regions.

Table 5.1- Summary of the sites analysed in this research.

Site name	Site code*	Location	Dates excavated	Period of use	No. of ind.	No. of ind. with physical impairment	Reference(s)
Early Anglo-Saxon							
Apple Down	AD	West Sussex	1982-1987	L5-E8 C	125	7	Down and Welch (1990)
Butler's Field	BF	Gloucestershire	1985	L5-E8 C	223	4	Boyle et al. (1998; 2011)
Edix Hill	EH	Cambridgeshire	1989-1991	E6-E7 C	148	6	Malim and Hines (1998c)
Finglesham	FS	Kent	1959-1967	E6-E8 C	223	1	Hawkes and Grainger (2006a)
Norton East Mill	NEM	County Durham	1983-1985	E6-E7 C	118	1	Sherlock and Welch (1992)
St. Anne's Hill	SAH	East Sussex	1991, 1997	5-7 C	192	6	Forsyth and Seaman (2015), Doherty and Greatorex (2016)
Watchfield	WF	Oxfordshire	1989	M5-E7 C	43	4	Scull et al. (1992)
Windmill Hill	WMH	Nottinghamshire	1983-1986	L5-E7 C	85	6	Bishop and Mordan (no date), Green (2016)
Worthy Park	WP	Hampshire	1961-1962	M5-M7 C	104	5	Hawkes and Grainger (2003a)
Middle Anglo-Saxon							
Bevis's Grave	BGR	Hampshire	1974-1976	7-10 C	84	3	Shennan (1978), Rudkin (2013)
Bishopsmill School	BMS	County Durham	2003	L7-L9/E10 C	89	1	Johnson (2005)
Burwell	BW	Cambridgeshire	1925-1929	7 C	146	3	Lethbridge (1926; 1927; 1928; 1929; 1931)
Staunch Meadow	SM	Suffolk	1980-1988	7-9 C	176	2	Anderson (1990), Tester et al. (2014)
Water Lane	WL	Cambridgeshire	2000	L6-L7 C	54	2	Duncan et al. (2003)
Later Anglo-Saxon							
Black Gate	BLG	Tyne and Wear	1973-1992	L7-L11 C	590	2	ARCUS (1996), Nolan et al. (2010), Swales (2012)
Elstow Abbey	EA	Bedfordshire	1965-1972	8/9-11 C	293	6	Baker (2014; 2016)
Priory Orchard	PO	Greater London	2014-2015	9-13 C	121	4	Randall (2014; 2016)
Raunds	RD	Northamptonshire	1977-1984	10-11 C	379	5	Boddington (1996), Craig (2006)
St. Peter's Church	SPC	Lincolnshire	1978-1984	10-12 C	453	18	Waldron (2007)

NB: *=utilised in this research; E= early, L= late, M= mid, C= century.

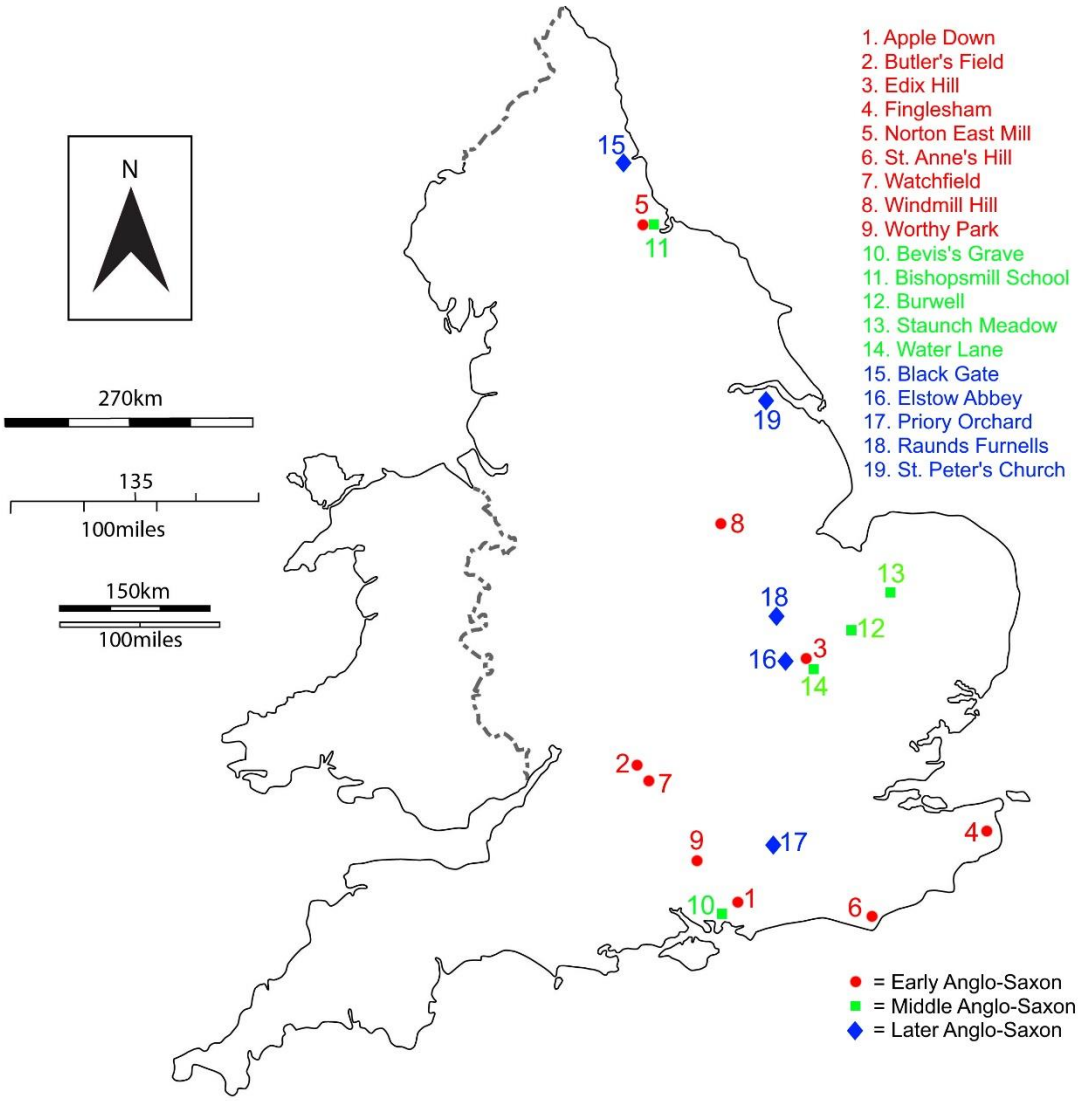

Figure 5.1- Locations of the Anglo-Saxon burial populations included in this research.

5.2 Time period categorisation

Most of the 19 cemeteries analysed spanned two Anglo-Saxon time periods. Cemeteries which were established in the late 5th or early 6th centuries and contained predominantly 5th to 6th century individuals were categorised as EAS (even if they were used into later centuries). Cemeteries which were established in the 7th century, contained predominately 7th to 8th century individuals, and had been labelled by previous researchers as “middle Anglo-Saxon” or “Final Phase”, were categorised as MAS. Cemeteries which were established after the 7th century and continued to be used into the 11th century were categorised as LAS. It is likely that some cemeteries of a specific time period category included individuals who belonged in a different time period category (particularly MAS individuals in cemeteries categorised as EAS, and LAS

individuals in cemeteries categorised as MAS). While this was not ideal, the scope of this research did not allow for analysis of the three time periods at an individual level, and in most cases, individuals at each site were not precisely dated. It should be noted that based on an extensive and comprehensive study of the end of furnished burial in Anglo-Saxon England, Bayliss et al. (2013a) propose that the "Final Phase" ended between 660-680 AD, which is earlier than previously believed. Therefore, it is more likely that Apple Down, Butler's Field, and Finglesham, which had been dated from the 5th/6th to early 8th centuries based on grave good types, actually went out of use in the late 7th century. These cemeteries can now be dated to the 5th to 7th centuries, and therefore fall more appropriately into the EAS time period category as defined in this research.

Several cemeteries for which time period category designation was particularly difficult are discussed below. At Apple Down, 12 individuals were found in Cemetery 2, which dated from the late 7th to early 8th centuries. While these few individuals may have belonged to a separate MAS cemetery, the sample size was too small for Cemetery 2 to be considered a separate site. Therefore, because a majority of the individuals at Apple Down dated from the late 5th to 7th centuries, Apple Down was categorised as a single cemetery dated to the EAS period, including the 12 individuals probably belonging to the "Final Phase" who most likely date to the late 7th century, not the 8th.

A similar issue arose with Butler's Field: 128 graves were from the late 5th to 6th centuries (EAS), 71 were from the "Final Phase" and were reported as dating from the 7th to early 8th centuries (MAS), and 24 were unphased (Boyle et al. 2011: 129). Although more than 50 individuals had been assigned to the MAS period, 24 individuals could not be assigned to either the EAS or MAS period. Therefore, if Butler's Field had been split into two distinct sites, these 24 individuals would have been excluded as they did not fit into either category. For the sake of consistency, and because a large majority of the individuals at Butler's Field were dated from the 5th to 6th centuries, Butler's Field was categorised as a single EAS cemetery, keeping in mind that some individuals belonged to the "Final Phase".

Duncan et al. (2003) state that the Water Lane cemetery's period of use began in the late 6th century and ended in the late 7th century, and describes the cemetery as "Late Migration/Final Phase". Only four brooches, which were

common in the EAS period, were found at Water Lane, and three of them belonged to WL-1307, who was identified as the earliest burial in the cemetery (Duncan et al. 2003). Seven cowrie shells were identified along with two hooked tags and several short stringed necklaces, all of which are grave goods more typically found in the latter half of the 7th century (Geake 1995: 43, 47). In addition, a cemetery was excavated in 1952 by D. Wilson in the same area, which may have been part of the same cemetery as Water Lane, although this cannot be confirmed (Duncan et al. 2003). The earlier Melbourn cemetery was established as a 7th century cemetery based on the associated grave goods and the lack of Migration period burials (Wilson 1956). Therefore, although the Water Lane cemetery began in the late 6th century and some of the individuals can be dated to the late Migration period, most of the grave goods can be dated to the 7th century and many are characteristic of the “Final Phase” (Duncan et al. 2003). Therefore, the cemetery was categorised as a “Final Phase” cemetery for this research (MAS).

5.3 Early Anglo-Saxon cemeteries

Many EAS cemeteries are mixed rite (inhumation and cremation). Because osteological analysis of cremation burials with regards to the study of physical impairment is extremely limited, the cremation burials are mentioned here but excluded from the remainder of the research (Section 3.2).

5.3.1 Apple Down

The Apple Down cemetery was located in Compton, West Sussex, and was excavated between 1982 and 1987 by the Chichester Excavations Committee after Anglo-Saxon artefacts were discovered by metal detectorists (Down and Welch 1990: 9). Two cemeteries were discovered within the excavation area (Figure 5.3). The first cemetery was mixed-rite (inhumation and cremation), and was dated from the late 5th to late 7th centuries, although a majority of the burials were dated between the late 5th to early 6th centuries (Down and Welch 1990: 9). The individuals were originally dated utilising typological analysis of the grave goods (Down and Welch 1990: 107-9). Bayliss et al. (2013b)

later provided radiocarbon dates for several individuals which are summarised in Table 5.2.

Table 5.2- Radiocarbon dates for Apple Down individuals. Source: Bayliss et al. (2013b).

Individual no.	Calibrated date (AD)	% probability
AD-107	550-635	92
AD-117	550-650	95
AD-134	545-610	98

Excavation of the first cemetery revealed 121 inhumation graves and 64 cremations. Thirty-three timber structures were identified (as evidenced through postholes), and while most were associated with cremation burials, there was one six-post structure and one four-post structure that appeared to stand over inhumation graves (Down and Welch 1990: 15) (Figure 5.2).

The second cemetery was located south of the first cemetery and contained 12 individuals who were buried with few grave goods, although two knives could be dated to the 7th to early 8th centuries. The previous interpretation of this cemetery is that it is of the "Final Phase" and belonged to baptised Christians (Down and Welch 1990: 14) (see Section 3.3.5 for a discussion of the validity of such interpretations).

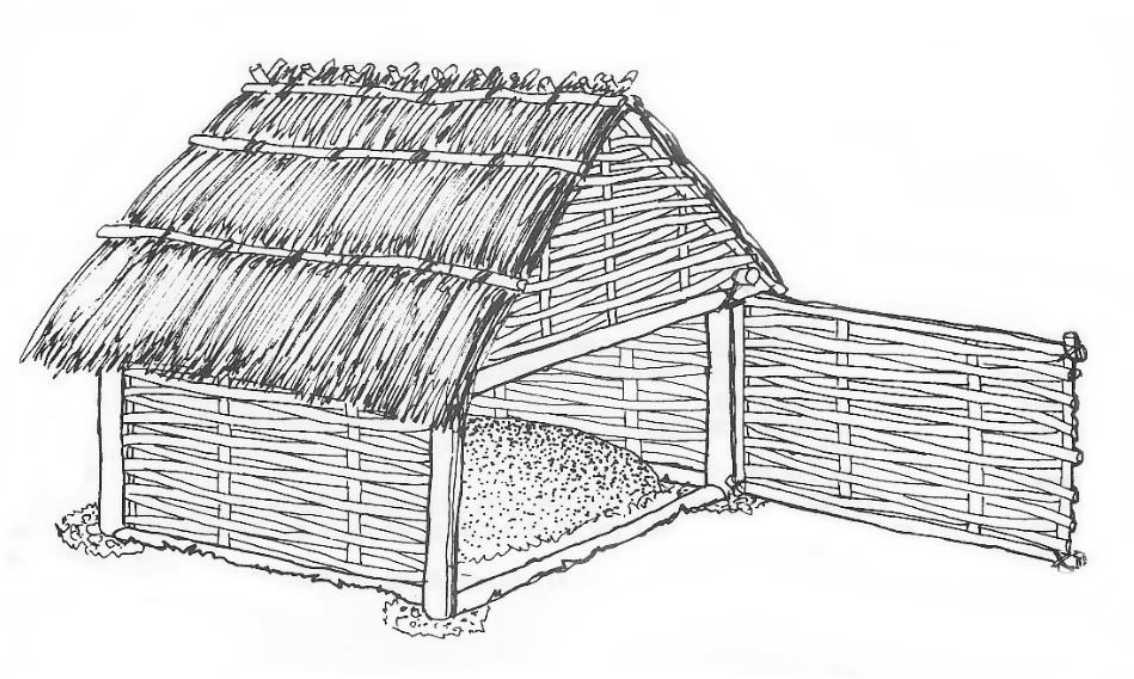

Figure 5.2- Alternative reconstruction of a four-post timber structure by Max Wholey. Source: Down and Welch (1990: 207). © Chichester District Council. All rights reserved.

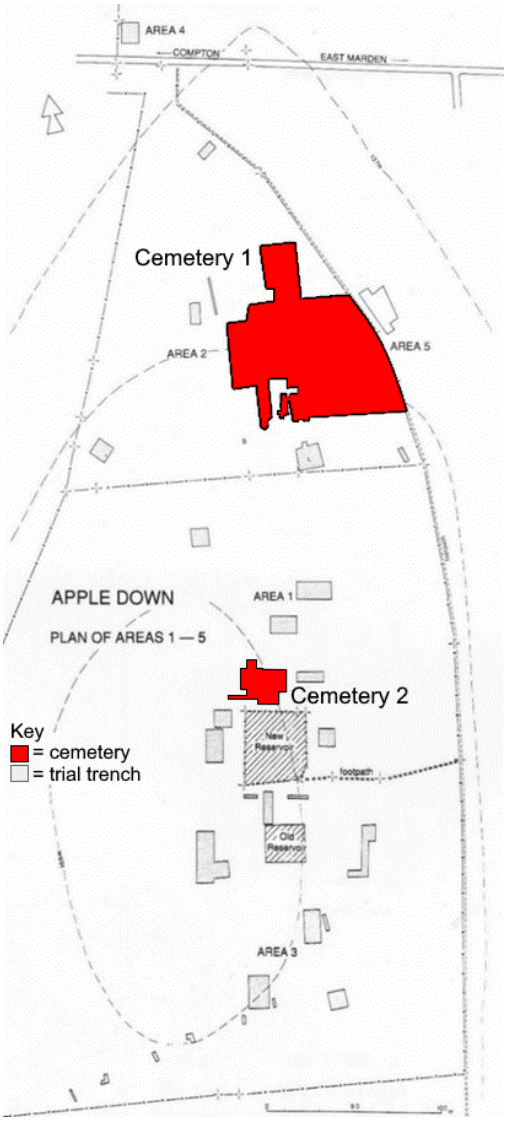

Figure 5.3- Full site map of the Apple Down excavations including both cemeteries. Source: Down and Welch (1990), and modified by current author. © Chichester District Council. All rights reserved.

5.3.2 Butler's Field

The Butler's Field cemetery was located in Lechlade, Gloucestershire, and was excavated in 1985 by Oxford Archaeological Unit (Boyle 1998: xi). Excavation revealed 199 inhumation graves, 29 cremation graves, three charnel deposits, and one empty grave (Boyle 1998: xi). It is estimated that about 50-75% of the cemetery was excavated (Harman 1998).

Burial at Butler's Field appears to be separated into two main phases which are summarised in Table 5.3 and visualised in Figure 5.4. Graves were assigned to a phase utilising artefact typology, stratigraphy, and orientation (Boyle et al. 2011: 129-45). Bayliss et al. (2013b; 2013c) later provided radiocarbon dates for several individuals which are summarised in Table 5.4

Table 5.3- Summary of the cemetery phases at Butler's Field. Source: (Boyle et al. 2011: 129-45).

Phase	Period	N	Description
1	Migration Period (5^{th} to 6^{th} C)	128	- Graves aligned with Romano-British ditch - Graves oriented NE-SW - 29 cremations
2	"Final Phase" (7^{th} to early 8^{th} C)	71	- Graves perpendicular to original alignment → oriented NW-SE
Unphased	N/A	24	- Impossible to date - Various orientations

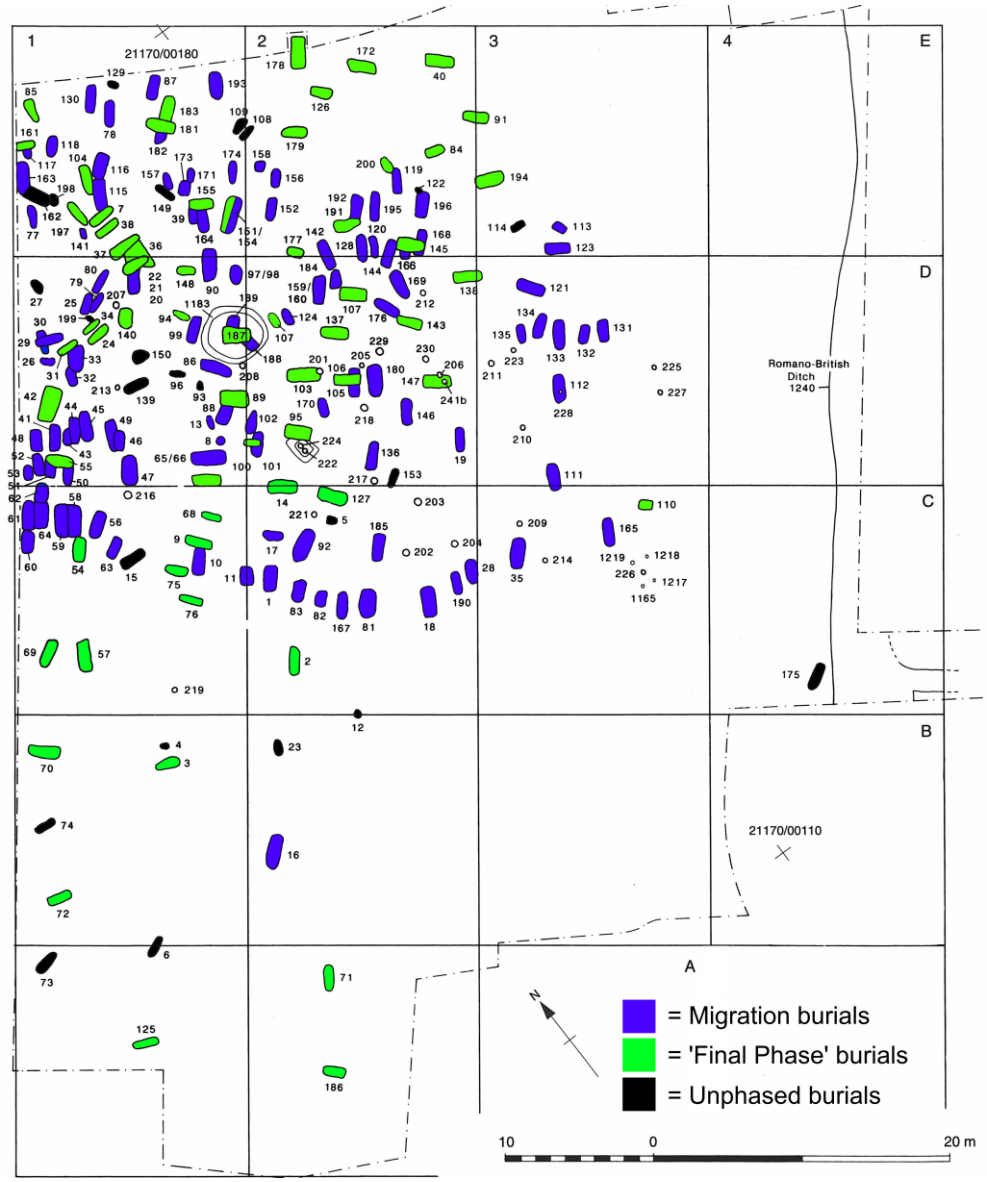

Figure 5.4- Map of the Butler's Field cemetery demonstrating the locations of Migration, "Final Phase", and unphased burials. Source: Boyle et al. (2011: 7), and modified by current author. © Oxford Archaeology.

Table 5.4- Radiocarbon dates for Butler's Field individuals. Source: Bayliss et al. (2013b; 2013c).

Individual no.	Assigned phase[1]	Calibrated date (AD)	% probability
BF-14	Final Phase	650-730	84
BF-18	Migration	540-610	70
BF-40	Final Phase	645-675	95
BF-138	Final Phase	610-665	95
BF-148	Final Phase	650-730	85
BF-155	Final Phase	645-675	95
BF-172A	Final Phase	610-670	95
BF-172B	Final Phase	645-670	95
BF-179	Final Phase	615-670	95
BF-187	Final phase	605-665	95

NB: [1]- from (Boyle et al. 2011: 129-45).

5.3.3 Edix Hill

The Edix Hill cemetery was located in Barrington, Cambridgeshire and was first excavated in 1860 and 1861 resulting in the exhumation of 40-50 burials (Malim 1998a). The cemetery was more formally excavated between 1989 and 1991 by Cambridgeshire County Council's Archaeological Field Unit, which resulted in 115 inhumations (Malim and Hines 1998c: xviii). An Iron Age settlement was identified (pits, ditches, fence lines, etc.), with evidence of long-term re-use of the site (Malim 1998b). With very few Roman finds, it is unlikely that the area was occupied by the Romans, but the Iron Age site was re-used with the establishment of the EAS cemetery (Malim 1998b). This cemetery is thought to date between *c.*500 to the early 7th century, a date range which was established through artefact typology (Hines 1998a). Bayliss et al. (2013b; 2013c) later provided radiocarbon dates for several individuals which are summarised in Table 5.5.

Table 5.5- Radiocarbon dates for Edix Hill individuals. Source: Bayliss et al. (2013b; 2013c).

Individual no.	Grave no.	Calibrated date (AD)	% probability
EH-11	7	415-495	58
EH-19	12	545-630	90
EH-29	14	545-630	84
EH-112	33	540-600	53
EH-148	48	545-615	89
EH-428	79	425-495	50
EH-436	83	545-635	88
EH-458	90	540-610	72
EH-459	91	645-685	95

5.3.4 Finglesham

The Finglesham cemetery was located in eastern Kent and was first excavated in 1928 (Brugmann 2006). The excavators located 38 graves, some of which were recorded and some of which were re-excavated later (Brugmann 2006). Finglesham was formally excavated between 1959 and 1967 by Sonia Chadwick Hawkes (Brugmann 2006). The excavators were able to open up the entire site to firmly establish the boundaries of the cemetery (Brugmann 2006). The cemetery consisted of 216 graves which were dated from 500-725 AD utilising grave good typology (Brugmann 2006).

Post-excavation work was severely delayed, and Hawkes died in 1999 before the publication was complete (Brugmann 2006). The monograph was finally edited and published in 2006, but this volume does not contain all the post-excavation work performed, leaving out many of the specialist reports (Brugmann 2006), some of which are held at The Duckworth Laboratory in Cambridge.

5.3.5 Norton East Mill

The Norton East Mill cemetery was located in Cleveland just northeast of Stockton-on-Tees, and was excavated between 1983 and 1985 by the Cleveland County Council Archaeology Section (Sherlock and Welch 1992: ix). Excavation revealed 117 inhumation burials and three cremation burials. Sherlock and Welch (1992: 15-7) argue that the graves appear to have been laid out in rows which radiate from the area where a Bronze Age pot was found (potentially indicating a burial mound), but that there are some areas where the graves do not follow the row pattern and instead are buried in clusters. As there was little intercutting between the burials, it has been proposed that their locations must have been visible at the time, although no evidence of marker posts was uncovered (Sherlock and Welch 1992: 22).

Use of the cemetery began in the 6th century and potentially continued into the early 7th century. This dating is based on the typological chronology of the grave goods found in association with the burials (Sherlock and Welch 1992: ix).

5.3.6 St. Anne's Hill

The St. Anne's Hill cemetery was located in Eastbourne, East Sussex. Skeletal material and associated Anglo-Saxon graves goods were discovered over the course of many years (1877, 1926, *c.*1960, *c.*1970) (Greatorex 2016a). A partial excavation was performed in 1991 uncovering 27 Anglo-Saxon graves and three cremations, and a full excavation of the area was finally performed by Archaeology South-East in 1997 (Greatorex 2016a).

Excavation revealed 193 grave cuts although two were not excavated. This cemetery is believed to have been established in the 5th century, and went out of use in the 7th century (Greatorex 2016b). These dates are mostly provided by typological grave good analysis, although less than 50% of the graves had dateable grave goods (Greatorex 2016b). Two radiocarbon dates were provided for two of the more isolated graves: Grave 472 (SAH-481) was dated from 410-645 AD, while Grave 13 (SAH-62) was dated from 640-875 AD, confirming the hypothesis that the cemetery was in use between the 5th to 7th centuries (Greatorex 2016b).

5.3.7 Watchfield

The Watchfield cemetery was located in the Vale of the White Horse, just southwest of Oxford and northeast of Swindon, and was excavated in 1983 by Oxford Archaeological Unit as a salvage operation (Scull et al. 1992). The site was further excavated in 1989 by the Department of Archaeology, University of Durham to investigate the context of the archaeological material excavated in 1983, and to try to define the limits of the cemetery (Scull et al. 1992).

Due to the nature of the salvage excavation in 1983, the quality of data gathered was not ideal, and it is possible that there were further burials and grave goods that were simply destroyed or displaced by machinery (Scull et al. 1992). Scull et al. (1992) point out that for those graves excavated in 1983, absence of grave goods cannot be assumed to indicate that the individual was buried without grave goods. Scull et al. (1992) also note that the presence of more cremations was certainly possible, although pottery was lacking in the plough soil.

The excavation in 1989 generally determined the margins of the cemetery with a series of trenches, and, taking into account the information from both

excavations, Scull et al. (1992) suggest that the main concentration of burials covered approximately 0.36 hectares. Utilising the burial density observed in Trench 5, it was approximated that 300-350 burials were originally included in this cemetery although in total, only 43 were excavated (Scull et al. 1992).

The dating of the burials, based mostly on grave goods and their associated typological and chronological sequences, suggests that the site was in use for a period of *c.*100-125 years from the middle of the 5th century to the beginning of the 7th century (Scull et al. 1992). The radiocarbon date provided for Grave 334 (WF-333) provides a date range from the 6th to early 7th centuries. Although this grave was relatively far away from the main focus of the cemetery, it is still broadly contemporaneous with the other graves which were dated using grave goods (Scull et al. 1992).

5.3.8 Windmill Hill

The Windmill Hill cemetery was located in Cotgrave, Nottinghamshire and was excavated between 1983 and 1986 (Bishop and Mordan no date). Due to a lack of funding and resources, the first year of excavation was performed by the site owners who agreed to mark the location of any burials encountered (N=32) and to bag the bones and grave goods as they removed them (Bishop and Mordan no date). As excavation and removal of the human remains was performed by non-professionals, it is likely that some skeletal material was missed (e.g. hand and foot bones), and that the funerary data gathered were not always consistent. The following year, 39 further burials and multiple ring ditches were excavated by volunteers and two professional archaeologists. In 1986, an archaeological team assembled through the Committee Program was able to finish the excavation (Bishop and Mordan no date).

Excavation uncovered 84 inhumations in total which contained the remains of at least 103 individuals. Three burial mounds were excavated which are thought to be the main focus of the cemetery. There were two types of burials present: Group A, which consisted of flexed individuals in shorter, wider graves which usually contained grave goods, and Group B, which consisted of extended individuals in narrow, longer graves which usually did not contain grave goods (Bishop and Mordan no date).

Use of the cemetery began in the late 5th century and continued throughout the 6th century, potentially into the early 7th century. This dating is based on the typological chronology of the grave goods found (Bishop and Mordan no date).

5.3.9 Worthy Park

The Worthy Park cemetery was located in Kingsworthy, Hampshire, about five miles from Winchester, and was excavated between 1961 and 1962 by Sonia Chadwick Hawkes and the Ministry of Public Building and Works (Hawkes 2003). Five graves were initially excavated by Frank Warren in 1944, but only minimal records were kept (Hawkes 2003). Full excavation of the cemetery was not possible, as it would have required the removal of beehives, a driveway, and large trees. This is unfortunate, as it was estimated that a third and final season of excavation would have allowed the excavators to define the south, west, and east margins of the cemetery rather than just the north (Hawkes 2003). It is estimated that only about a half of the cemetery was excavated and that the founder burials of the cemetery lie unexcavated to the west (Hawkes 2003). Ninety-four inhumations graves were excavated in 1961 and 1962. Five of these graves contained no skeletal remains and were excluded from further analysis in this research (Graves 6, 66, 67, 86, and 89). There were at least 46 cremation graves excavated along with six empty graves (Hawkes 2003).

The cemetery is reportedly dated from the mid-5th to the mid-7th centuries, however no details on how this date range was established are provided. Hawkes (2003) believed that the earliest burial was in an unexcavated western area of the cemetery, and also noted that the latest date of the cemetery was not confirmed. While an inventory of grave goods was provided, a comparative typological analysis was not performed, thus the mid-5th to mid-7th centuries is an estimated date range for this cemetery (Stuckert 2017).

5.4 Middle Anglo-Saxon cemeteries

5.4.1 Bevis's Grave

The Bevis's Grave cemetery was located in Camp Down, Bedhampton, Hampshire, just northeast of Portsmouth. The long barrow known as Bevis's

Grave was first identified on a map in 1757, but was not depicted on the 1859/1860 Ordnance Survey, indicating that it was probably destroyed around this time (Rudkin 2013). Documentary evidence from 1801 notes that half of the barrow was removed for building materials, and in 1857 it was reported that people digging into the chalk discovered three skeletons (Rudkin 2013).

Trial excavations were carried out in 1974 by the Portsmouth City Museum under the direction of David Rudkin, and the remainder of the cemetery was excavated in 1975 and 1976, with particular emphasis on the eastern end of the barrow where plough damage was occurring (Rudkin 2013). These excavations established that ploughing and quarrying had destroyed the barrow mound, and successfully identified the southern and eastern limits of the cemetery (Rudkin 2013). Seventy-one graves were uncovered, and the cemetery was dated using radiocarbon which provided a period of use from the 7th to 10th centuries (Rudkin 2013) (Table 5.6).

Table 5.6- Radiocarbon dates for Bevis's Grave individuals. Source: Cherryson (2005).

Individual no.	Grave no.	Calibrated date (AD)	% probability
BGR-1	3	685-890	95
BGR-41	44	660-805	95
BGR-57	59	890-1020	95
BGR-76	68	660-805	95
BGR-90	1	595-665	95

A proposed development plan of the cemetery suggests that burials originated on the western end of the long barrow and then spread eastward over time (Rudkin 2013). The two graves with S-N orientation are located at the western end of the barrow, one with a radiocarbon date of 595-665 AD (Cherryson 2005). Documentary accounts from a previous excavation, which uncovered 12 skeletons in the western area of the barrow, report that a spearhead was found in association with one of the burials, leading Rudkin (2013) to suggest that these graves were earlier than the rest of the cemetery. Radiocarbon dates from the eastern aspect of the cemetery indicate that this area is dated between the late 7th to early 8th centuries, with some burials from the late 8th to early 9th centuries spreading back along the southern side of the barrow (Rudkin 2013). Grave 59 (BGR-57), located on the northern border of the eastern

side of the cemetery, provided a radiocarbon date from the late 10th to early 11th centuries. As this date does not fit with the rest of the cemetery, Rudkin (2013) proposes that this burial could be a later insertion. However, he notes that without more radiocarbon dates and because the northern limit of the cemetery was not established, conclusions about this later burial must remain tentative.

5.4.2 Bishopsmill School

The Bishopsmill School cemetery was located in Norton, Stockton-on-Tees in the ceremonial County Durham. The Cleveland County Archaeological Section excavated an evaluation trench in 1994 which located eight inhumation burials (Johnson 2005). In 2003, two further evaluation trenches uncovered more human remains. It was decided that a full, open area excavation would take place, which was carried out by Tees Archaeology on behalf of the Stockton Borough Council in 2003 (Johnson 2005).

A total of 98 inhumation burials were identified, nine of which were not excavated, and five of which did not contain human skeletal material. The cemetery appears to be separated into three phases of burial: the earliest Phase 1 consists of graves arranged in north-south rows, Phase 2 consists of strings of graves on a different alignment, which cut into many of the earlier graves, and Phase 3 consists of graves which return to the original Phase 1 alignment and cut into many of the earlier Phase 2 graves (Johnson 2005) (Figure 5.5). Radiocarbon dates were provided for four skeletons (Table 5.7) which date the cemetery from the late 7th to the late 9th or early 10th centuries.

Table 5.7- Radiocarbon dates for Bishopsmill School individuals. Source: Johnson (2005).

Ind. no.	Grave	Calibrated date (AD)	% probability
BMS-190	188	660-790	95
BMS-330	98	680-890	95
BMS-333	331	650-770	95
BMS-417	224	710-910	95

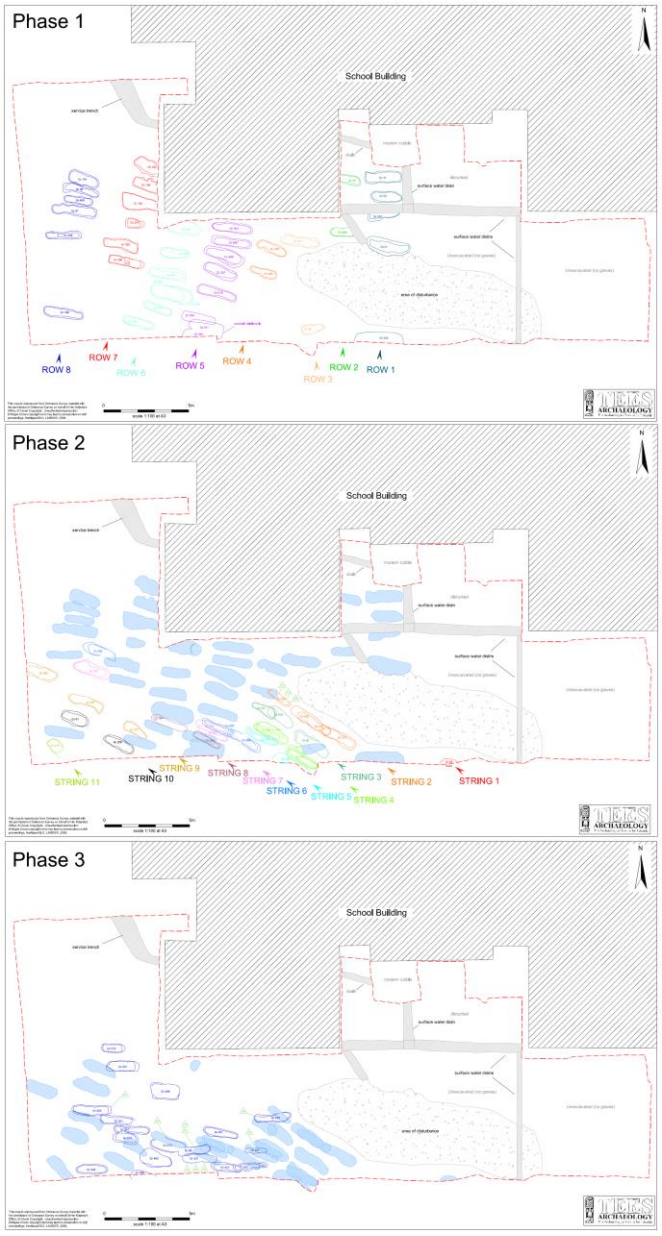

Figure 5.5- Phases 1-3 of the Bishopsmill Cemetery. Source: Johnson (2005). © Tees Archaeology.

5.4.3 Burwell

The Burwell cemetery was located on the border between Cambridgeshire and Suffolk in the town of Burwell. In 1884, the cemetery was uncovered during works at the Victoria Lime Pits, and 14 skeletons were discovered but not recorded (Lethbridge 1926). The remainder of the area was excavated between 1925 and 1929 on behalf of the Cambridge Antiquarian Society (Lethbridge 1931: 72).

The main excavator, T. C. Lethbridge, described the finds each year in the *Proceedings of the Cambridge Antiquarian Society* (Lethbridge 1926; 1927;

1928; 1929). The final publication indicated that 124 graves had been excavated in total (Lethbridge 1931), however in Lethbridge's unpublished field notebooks held at the Cambridge University Library, there are grave drawings for 140 graves. All 140 graves were included in this research, as notes about grave goods were recorded in the field notebooks. It should be noted, however, that the locations of Graves 125-140 are unknown.

No radiocarbon dating has been performed for the Burwell cemetery. Thus it is dated using typological analysis of the grave goods, but is considered a type-site for the "Final Phase" (Scull 2013) (Section 3.3.1). Lethbridge (1931) argued that because there were no brooches (which were extremely common in "pagan" burials), and because many of the richer grave goods found at Burwell were associated with the end of the pagan period, that Burwell was a 7th century Christian cemetery. Similarly, Evison (1987: 106-7) reports that workboxes, (three of which were found at Burwell) do not appear in Anglo-Saxon graves before the second half of the 7th century, while Meaney (1981) reports that cowrie shells (one of which was found at Burwell) are almost never found in pre-7th century cemeteries, and can be used to indicate a Conversion Period date.

5.4.4 Staunch Meadow

The cemetery at Staunch Meadow was located in Suffolk, approximately 25 miles inland from the Wash on the edge of large fenlands on the border between Norfolk and Suffolk (Tester et al. 2014: 1). Eight trial trenches excavated in 1979 by Robert Carr uncovered large amounts of human skeletal remains and the walls of a medieval building (Tester et al. 2014: 5). Excavation of the surrounding area took place between 1980 and 1988 and was performed by young people from the Youth Opportunities Programme, who were supervised by professional archaeologists from the Suffolk Archaeological Unit (Tester et al. 2014: 6). As this work was performed by young non-professionals, it is likely that some skeletal material was missed (e.g. hand and foot bones) and that recording was not always consistent.

Although the excavations only revealed approximately one third of the entire site, a large amount of archaeological evidence was uncovered, confirming the presence of a MAS settlement dated between the 7th to 9th centuries (Tester

et al. 2014) (Figure 5.6). The excavated area revealed 35 buildings, a raised causeway, a wooden bridge, a medieval enclosure, areas of economic activities (metalworking and textile processing), two cemeteries, and two churches.

Figure 5.6- Staunch Meadow excavation plan showing all post-prehistoric features. Source: Tester et al. (2014:32), and modified by current author. © Suffolk County Council.

Phasing and dating for the entire site consisted of dendrochronology, radiocarbon dating, and typological artefactual evidence (Tester et al. 2014: 13-25). A summary of the timeline of the settlement is provided in Table 5.8. Twenty-seven radiocarbon dates were gathered from human bone, waterlogged wood, charcoal, and peat. Together these suggest that settlement activity commenced between 680-780 AD and that Cemetery 2 was in use from 560 to 990 AD (Tester

et al. 2014: 13-25). Although 20 samples from Cemetery 1 were submitted for radiocarbon dating, not enough collagen remained in the bones for an accurate date (Tester et al. 2014: 19). The large amounts of Thetford pottery (which probably went out of use around 850 AD), along with the typological dating of other small finds, indicates that settlement activity ended in the late 9th century (Tester et al. 2014: 24).

Table 5.8- Summary of the timeline of settlement at Staunch Meadow. Source: Tester et al. (2014: 13-25).

Phase	Date range	Description
1.1 + 1.2	M7-E8 C	- Dispersed settlement - Enclosure and three associated buildings at N end of site - Trackway marking route from the floodplain - Three further buildings to the S of the site and a series of ditches
2.1	E8-M8 C	- Cemetery 1 and the church building 7098 established→ probable that burials began after the construction of the church (as they are well-aligned with it) - Several other buildings and a causeway providing access from the floodplain constructed
2.2	M8-9 C	- Clear increase in the number of buildings constructed - Some buildings were replaced (e.g. church 7098 replaced with church 8851) - Ditch with a gated entrance divided the N and S of the site
2.3	M9-L9 C	- Church 8851 abandoned - A few buildings replaced - Cemetery 2 established - Sudden decline suggested by climax rubbish heaps around the site
2.4	L9 C	- Dominated by a ditch which cut through the central enclosure→ suggests this area was important - Some evidence of occupation in the S of the site but no evidence of the construction of new buildings

NB: E= early, M= middle, L= later, C= century.

5.4.5 Water Lane

The Water Lane cemetery was located in Melbourn, Cambridgeshire, about eight miles south of Cambridge (Duncan et al. 2003). In 1951, 30 7th century burials were found around 110m from the Water Lane cemetery. A larger excavation took place in 2000 by Albion Archaeology which uncovered 52 inhumation burials (Duncan et al. 2003). Although there was a prehistoric barrow located nearby, the cemetery does not appear to be focused on this feature, but rather around various focal points, including the grave of a richly furnished female

individual (Duncan et al. 2003). Based on typological analysis of grave goods, it is thought that the cemetery was active for about 100 years and went out of use in the late 7th century (Duncan et al. 2003). Bayliss et al. (2013b; 2013c) later provided radiocarbon dates for several individuals which are summarised in Table 5.9.

Table 5.9- Radiocarbon dates for Water Lane individuals. Source: Bayliss et al. (2013b; 2013c).

Individual no.	Grave no.	Calibrated date (AD)	% probability
WL-1038	SG95	595-660	95
WL-1187	SG80	610-670	95
WL-1188	SG79	605-660	95
Wl-1204	SG77	550-630	95
WL-1229	SG82	585-660	95
WL-1271	SG89	420-495	58
WL-1293	SG69	570-650	95
WL-1307	SG75	420-495	63

5.5 Later Anglo-Saxon cemeteries

5.5.1 Black Gate

The Black Gate cemetery, which is located within the grounds of the medieval castle in Newcastle upon Tyne, overlying the Roman fort of *Pons Aelius*, was excavated over 13 seasons between 1973 and 1992 (Nolan et al. 2010). Earlier excavations were focused on the barbican gatehouse of the castle, giving the site the name “Black Gate”. However, it is worth noting that the cemetery was not associated with the Black Gate, but was within the castle grounds.

As the excavation was long-lasting, excavation and recording methods were not always consistent, and tended to improve towards the latter end of the excavation (Nolan et al. 2010). Identification of definite grave cuts was hindered by the large amount of intercutting and the fact that there was almost no difference in soil colour between the cemetery soil and the fill material (Nolan et al. 2010). Due to these complications, it was extremely difficult to phase the cemetery, and it was only possible to categorise a grave as LAS or medieval when the 1080 AD clay rampart was present to serve as a stratigraphic reference (Nolan et al. 2010). Only the pre-1080 AD skeletons are included in this research.

Although there is no documentary evidence relating to the castle from the 7th to 9th centuries, two glass beads associated with the later 7th century, along with two radiocarbon burial dates, suggest that the cemetery was established in the late 7th century (Nolan et al. 2010) (Table 5.10). Several coin finds indicate that there was burial activity in the 8th to 9th centuries (Nolan et al. 2010). Documentary evidence confirms that the cemetery was in full use by the 10th century, until a castle was constructed on top of it in 1080 AD by Robert Curthose, son of William I, which disturbed the northern and western aspects of the cemetery (Nolan et al. 2010). The cemetery was further disturbed when Henry II rebuilt the castle in stone, by post-medieval refortification efforts for the Civil War, and by post-Civil War construction projects for which there is documentary evidence of the removal of skeletal remains starting in 1752 (Nolan et al. 2010). The LAS cemetery can be dated from the late 7th to 12th centuries.

Table 5.10- Radiocarbon dates for Black Gate individuals. Source: Nolan et al. (2010).

Individual no.	Calibrated date (AD)	% probability
BLG-22	880-1040	95
BLG-40	880-1040	95
BLG-99*	211-357	92
BLG-175	1015-1155	95
BLG-368	808-973	93
BLG-422	670-900	-
BLG-477	799-883	-

NB: *This burial was considered an anomaly as it overlaid features which were within the cemetery soil.

In total, 660 distinct graves were excavated, with 679 individuals identified in post-excavation analysis. There was a large amount of charnel and disarticulated bone at this site, which is not included in this research. The full extent of the cemetery was not established due to disturbance by later building activities, and Nolan et al. (2010: 162) conclude that, with the limited evidence available, all that can be said about the limits of the cemetery is that "…the excavated burials appear to lie within the walled area of the Roman fort, and that both the extent of the fort and of the cemetery were probably dictated by the steep natural scarps to the east…, west…, and south of the promontory". Thus, the Black Gate skeletal collection as it exists today is only a portion of the larger cemetery population that was once buried in this area.

5.5.2 Elstow Abbey

Elstow Abbey is located about two kilometres south of Bedford and was founded around 1078 AD by the Countess Judith of Huntingdon, niece of William the Conqueror. Excavations at Elstow Abbey occurred between 1965 and 1972 with the support of the Bedford Archaeological Society. The excavations took place under the direction of David Baker, and were carried out primarily by local sixth-form students as part of a school project, although university students from Portsmouth Polytechnic were involved as well (Baker 2014). As young non-professionals were excavating and recording, it is likely that some skeletal remains were missed (e.g. hand and foot bones) and recording was not always consistent.

The excavation of 205 trenches exposed a LAS cemetery that had been cut by the construction of the abbey in 1078 AD, and an overlapping medieval cemetery. It is proposed that there was a LAS church somewhere in the vicinity, which perhaps drew Countess Judith to this spot. No evidence of an earlier building was found, but areas large enough to accommodate such a building were left unexcavated due to access restrictions (Baker 2016). Around 300 graves were excavated, many of them suffering from severe damage due to root action, intercutting from other graves, and destruction by later building works. The skeletons were cleaned *in situ*, and some were photographed and drawn, but recording methods were quite basic and the standards of recording varied widely (Baker 2016).

After the appointment of David Baker as County Archaeology and Conservation officer in 1972, post-excavation analysis was intermittent. The skeletons were washed and placed into bags and boxes by the sixth form or first year undergraduate students, and were stored in the Bedford Museum starting in the mid-1970s (Baker 2016). Osteological analysis was performed on some of the individuals by various researchers from the 1970s to the 1990s, and the collection was archived and collated between 2002 and 2004 by Albion Archaeology (Baker 2016). In 2013 and 2014, a review of the collection took place which gathered drawings, *in situ* photographs, photographs of the individuals who had been stored in plastic bags, written descriptions of the burials, and information from the original burial notebook (Baker 2016). The cemetery awaits radiocarbon dating, which is in progress, but those individuals categorised as LAS

can be considered pre-11th century due to the fact that the abbey built in 1078 AD cut into the cemetery that was already present at the time.

5.5.3 Priory Orchard

The Priory Orchard cemetery was located in the town of Godalming in Surrey, approximately 30 miles southwest of London. Surrey County Archaeological Unit (SCAU) excavated a trial trench in 2012 which identified a large Christian cemetery in the area (Randall 2014). A large-scale excavation began in 2014 which established the north-western extent of the cemetery, and revealed 75 *in situ* inhumations (Randall 2014). The excavations continued in 2015, established the northern and western extents of the cemetery, and uncovered 225 *in situ* inhumations (Randall 2016).

The cemetery, which was not directly adjacent to the LAS church of St. Peter and St. Paul's, is estimated to have been approximately 650m^2 in area (Figure 5.7) (Randall 2016). The SCAU excavations only constituted 150m^2, and thus only approximately 23% of the cemetery was revealed (Randall 2016). From this, it is estimated that the entire cemetery would have held around 1,200 individuals and possibly as many as 4,000 (Randall 2016).

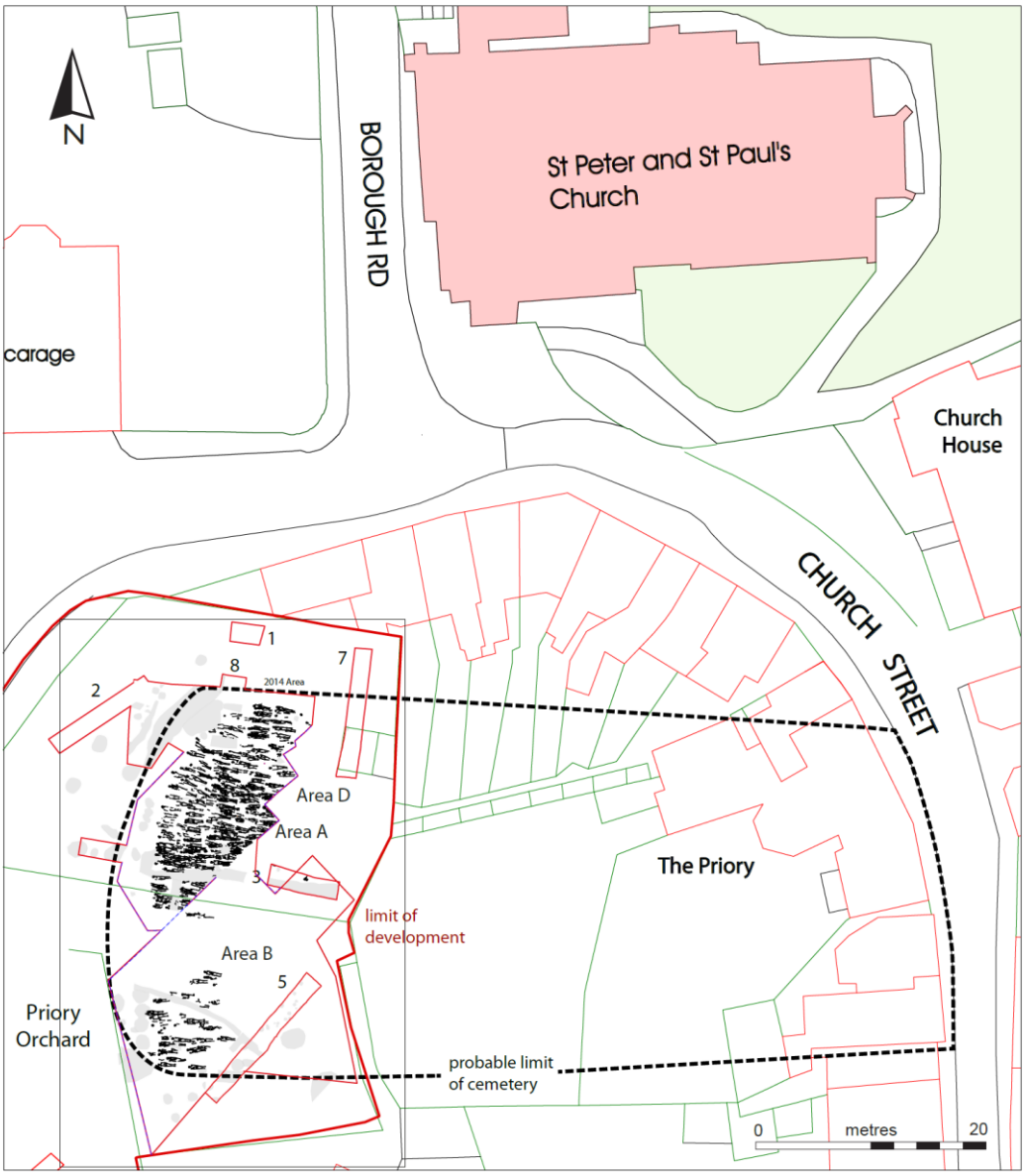

Figure 5.7- Priory Orchard, Godalming. Location of excavation, demonstrating the estimated limit of the cemetery. Source: Randall (2016: 46). © Surrey County Archaeological Unit (part of Surrey County Council). Not to be reproduced in any form without their explicit permission.

The inhumations on the western side of the cemetery tended to be single, discrete burials with few instances of intercutting, while the inhumations in the southeast were generally two to three inhumations deep with large amounts of intercutting, truncation, and charnel (Randall 2014). The inhumations in the north-eastern area of the cemetery, which were generally arranged in two parallel rows, were two, three, or even four burials deep, and had less intercutting and fewer instances of truncation of the earlier burials (Randall 2014). A period of use between 830 and 1260 AD has been established for this cemetery utilising pottery associated with inhumations and radiocarbon dating (Randall 2016) (Table 5.11).

Table 5.11- Radiocarbon dates for Priory Orchard individuals. Source: Randall (2016).

Individual no.	Calibrated date (AD)	% probability
PO-3013	880-990	95
PO-3078	990-1045 or 1095-1120	95
PO-3107	885-1015	95
PO-3258	775-970	95
PO-3281	890-1015	95
PO-3398	770-905 or 920-965	95

5.5.4 Raunds

Raunds is located in the Nene Valley of East Northamptonshire and was excavated between 1977 and 1984 by the Northamptonshire Archaeological Unit (Boddington 1996). Subsequent analysis determined that an Anglo-Saxon settlement was established in this area in the 6th century, and by the 9th century, a small church had been built (Boddington 1987). In the 10th century, burial began in the area adjacent to the church, and by the late 11th to the early 12th centuries, all zones of the graveyard had been used, a large church replaced the smaller one, and burial activity in the graveyard stopped. A total of 363 burials were excavated, a majority of which were earth-cut and oriented W-E (Boddington 1996). Radiocarbon dates were provided for several individuals (Table 5.12). The most probable date range for the cemetery (excluding RD-5266) was 978-1040 AD (Boddington 1996).

Table 5.12- Radiocarbon dates for Raunds individuals. Source: Boddington (1996).

Individual no.	Calibrated date (AD)	Probability area
RD-5222	943-1217	0.98
RD-5299	979-1216	1.00
RD-5286	889-1194	0.99
RD-5266	596-784	0.84
RD-5223	682-1042	0.97
RD-5178	985-1230	0.98

5.5.5 St. Peter's Church

St. Peter's Church is located in Barton-upon-Humber, which is situated along the river Humber in North Lincolnshire, 42km from the mouth of the estuary where the river Humber meets the sea (Rodwell 2007b). In 1972, St. Peter's Church was made redundant, and St. Mary's Church, which lies only 100m away, was declared the official parish church of the town (Rodwell 2007b). St. Peter's

Church was subsequently given to English Heritage for conservation purposes and so it could be used as a historical public display building (Rodwell 2007b). In order to examine the architectural phasing and features of the actual church building, and to investigate the burial population in the church graveyard, major archaeological excavation was carried out inside and outside the church between 1978 and 1984 (Rodwell 2007b). Around 2,800 articulated burials were excavated ranging from the late 10th to the late 19th centuries, with the last recorded burial in 1844. Due to the large amounts of intercutting, stratigraphic relationships between burials, along with dendrochronology and radiocarbon dating allowed researchers to divide the cemetery into five general phases (Rodwell 2007a) (Table 5.13).

Table 5.13- Summary of the cemetery phases for St. Peter's Church. Source: Waldron (2007: 34).

Phase	Period	Time range (AD)	No. of individuals
A	Georgian and Victorian	*c.*1700-1855	427
A/B	Early post medieval to Georgian/Victorian	*c.*1500-1855	224
B	Early post-medieval	*c.*1500-1700	78
B/C	Late medieval-early post-medieval	*c.*1300-1700	457
C	Late medieval	*c.*1300-1500	85
C/D	Early-late medieval	*c.*1150-1500	368
D	Early medieval	*c.*1150-1300	179
D/E	Anglo-Saxon and Norman-Early medieval	*c.*950-1300	437
E	Anglo-Saxon and Norman	*c.*950-1150	446
Others	N/A	-	17
Unphased	N/A	-	32

NB: Highlighted Phase E is the only one considered in this research.

As expected, not all of the burials could be confidently placed into a single phase. Only individuals who were definitively placed into Phase E were included in this research (N= 446). This excluded individuals who were classified as Phase D/E as the end date for Phase D was in the 14th century. However, this means that it is possible that some LAS individuals were excluded.

Chapter 6- Comparison of previous osteological data and demographic analysis

6.1 Comparison with previous osteological analysis

As mentioned in Section 4.2, due to financial and time constraints, analysis of the entirety of each burial population included in this research by the current author was not feasible. In order to appropriately utilise the extant age/sex data for the whole burial population from each site, it was necessary to establish whether the previous osteological analysis performed was reliable and consistent. For each site, 30 individuals were randomly sampled and assessed by the current author for sex, age, and palaeopathology following standard methods (Sections 4.3.1 to 4.3.3). The sex and age data gathered from previous analysis was statistically compared to that gathered by the current author utilising Cohen's weighted kappa tests (Section 4.3.4). The palaeopathological data gathered from previous analysis was qualitatively compared with that gathered by the current author (Section 4.3.5). A summary of the osteological methods utilised by the previous researchers is provided in Table 6.1.

Table 6.1- Summary of the osteological methods utilised by previous researchers.

Site	Previous analysis	Sex assessment methods			Specific techniques	Age estimation methods								Specific techniques
		P	S	O		PS	AS	CS	SR	DA	DD	EF	DL	
Apple Down	Mary Harman (1990)	X	X	X	Ferembach et al. (1980)					X	X	X	X	Miles (1962); Ferembach et al. (1980)
Butler's Field	Mary Harman (1998)	X	X	X	Ferembach et al. (1980)					X	X	X	X	Miles (1963); Ferembach et al. (1980)
Edix Hill	Corinne Duhig (1998)	X	X	X	Phenice (1969); Ubelaker (1989a: 52-5)	X	X	X		X	X	X		Moorrees et al. (1963b; 1963a); Brothwell (1972: 6); Lovejoy et al. (1985); Meindl and Lovejoy (1985); Pick and Howden (1988); Steele and Bramblett (1988); Ubelaker (1989a: 64); Brooks and Suchey (1990)
Finglesham	Shirley Jarman (1964; 1966)				None cited					X	X			Brothwell (1963)
Finglesham	Bernard Denston in Hawkes and Grainger (2006a)				None cited									None cited
Norton East Mill	Mandy Marlowe (1992)	X			None cited→ "characteristics of all bones with most weight given to the pelvis" (107)			X		X	X	X	X	Ferembach et al. (1980); Brothwell (1981)
St Anne's Hill	L. Sibun (2016)				"Standard osteological techniques" (44)									"Standard osteological techniques" (44)
St Anne's Hill	Hayley Forsyth in Forsyth and Seaman (2015)	X	X	X	Buikstra and Ubelaker (1994); Bass (1995)	X	X			X	X	X	X	Brothwell (1981); Lovejoy et al. (1985); Brooks and Suchey (1990); Mays (2006); Schaefer et al. (2009)
Watchfield	Mary Harman in Scull et al. (1992)	X	X	X	Ferembach et al. (1980)	X		X		X	X	X	X	Miles (1962: 884); Ferembach et al. (1980)

NB: P= pelvis, S= skull, O= other, PS= pubic symphysis, AS= auricular surface, CS= cranial sutures, SR= sternal rib ends, DA= dental attrition, DD= dental development, EF=epiphyseal fusion, DL= diaphyseal length.

Site (cont'd)	Previous analysis	Sex assessment methods			Specific techniques	Age estimation methods								Specific techniques
		P	S	O		PS	AS	CS	SR	DA	DD	EF	DL	
Watchfield	C. A. Marlow in Scull et al. (1992)	X	X	X	Dawes and Magilton (1980); Ferembach et al. (1980); Shipman et al. (1980); Brothwell (1981); Steele and Bramblett (1988)	X		X		X	X	X	X	Miles (1962: 884); Ferembach et al. (1980)
Windmill Hill	Emma Green (2016)	X	X		Mays and Cox (2000); Brickley and McKinley (2004)	X	X			X	X	X	X	Brothwell (1981); Lovejoy et al. (1985); Brooks and Suchey (1990); Smith (1991); Hoppa (1992); Gowland (1998); Buckberry and Chamberlain (2002); Schaefer et al. (2009)
Worthy Park	Calvin Wells and Bernard Denston in Wells et al. (2003)				None cited									None cited
Bevis's Grave	Susan Shennan (1978)	X	X	X	None cited			X		X	X	X		None cited
Bishopsmill School	Paul Johnson (2005)	X	X	X	Buikstra and Ubelaker (1994); Bass (1995); Schwartz (1995)	X	X			X	X	X	X	Miles (1962); (Moorrees et al. 1963a); Lovejoy et al. (1985); Brooks and Suchey (1990); Smith (1991); Hoppa (1992); Scheuer and Black (2000)
Staunch Meadow	S. Anderson (1990; 2014)	X	X	X	Dawes (1980); Ferembach et al. (1980); Brothwell (1981)	X		X		X	X	X	X	Ferembach et al. (1980); Brothwell (1981)
Water Lane	Corinne Duhig in Duncan et al. (2003)	X	X	X	Stewart (1979); Steele and Bramblett (1988); Ubelaker (1989a); İşcan and Kennedy (1994)	X	X	X	X	X	X	X	X	Stewart (1979); Steele and Bramblett (1988); Ubelaker (1989a); İşcan and Kennedy (1994); Cho et al. (1996)

NB: P= pelvis, S= skull, O= other, PS= pubic symphysis, AS= auricular surface, CS= cranial sutures, SR= sternal rib ends, DA= dental attrition, DD= dental development, EF=epiphyseal fusion, DL= diaphyseal length.

Site (cont'd)	Previous analysis	Sex assessment methods			Specific techniques	Age estimation methods								Specific techniques
		P	S	O		PS	AS	CS	SR	DA	DD	EF	DL	
Black Gate	Diana Swales (2012)	X	X	X	Stewart (1979); Buikstra and Ubelaker (1994)	X	X		X	X	X	X	X	Todd (1921); Miles (1962); Moorrees et al. (1963a); Anderson et al. (1964); Maresh (1970); Gindhart (1973); Anderson et al. (1976); Fazekas and Kósa (1978); Scheuer et al. (1980); İşcan et al. (1984); Lovejoy et al. (1985); Krogman and İşcan (1986); Brooks and Suchey (1990); Smith (1991); Hoppa (1992); Bass (1995); Schwartz (1995); Scheuer and Black (2000)
Elstow Abbey	Anne Stirland (unpublished recording forms)	X	X	X	None cited	X				X	X	X		None cited
Elstow Abbey	Don Brothwell, Annie Grant et al. (unpublished recording forms)	X	X		None cited					X	X			None cited
Priory Orchard	Various researchers at the University of Roehampton (unpublished database)	X	X	X	Phenice (1969); Stewart (1979); Sutherland and Suchey (1991); White et al. (2011)	X	X	X		X	X	X		Brothwell (1981); Lovejoy et al. (1985); Meindl and Lovejoy (1985); Brooks and Suchey (1990); Ubelaker (1999); Scheuer and Black (2000)
Raunds	Lizzy Craig (2006)	X	X		Phenice (1969); Buikstra and Ubelaker (1994)	X	X			X	X	X	X	Moorrees et al. (1963b); Brothwell (1981); Ubelaker (1989b); Brooks and Suchey (1990); Scheuer and Black (2000); Buckberry and Chamberlain (2002)

NB: P= pelvis, S= skull, O= other, PS= pubic symphysis, AS= auricular surface, CS= cranial sutures, SR= sternal rib ends, DA= dental attrition, DD= dental development, EF=epiphyseal fusion, DL= diaphyseal length.

Site (cont'd)	Previous analysis	Sex assessment methods			Specific techniques	Age estimation methods								Specific techniques
		P	S	O		PS	AS	CS	SR	DA	DD	EF	DL	
St. Peter's Church	Tony Waldron (2007)	X	X	X	Ferembach et al. (1980), Jurmain (1986), Bass (1995), Reichs (1997); Katzenberg and Saunders (2000)	X	X		X	X	X	X	X	Miles (1962); Ferembach et al. (1980); Jurmain (1986); Bass (1995); Reichs (1997); Katzenberg and Saunders (2000)

NB: P= pelvis, S= skull, O= other, PS= pubic symphysis, AS= auricular surface, CS= cranial sutures, SR= sternal rib ends, DA= dental attrition, DD= dental development, EF=epiphyseal fusion, DL= diaphyseal length.

For most of the sites, some adaptation of the previous osteological data was necessary to allow for statistical comparison with the current author's data and for subsequent demographic analysis of the entire population. A summary of the necessary data category adaptations for each site is provided in Appendix 1. The age/sex data provided by the previous osteological analysis and the age/sex data gathered by the current author for the 30 randomly sampled individuals are also compared qualitatively for each site in Appendix 1. For all sites (excluding Elstow Abbey), no significant qualitative differences were noted between the palaeopathological analysis of the current author and the previous researchers (see Appendix 3). The Cohen's weighted kappa values (κ) from the sex/age data comparison for each site are provided in Table 6.2.

Table 6.2- Cohen's weighted κ values for sex and age comparison for each site.

Site	N	κ value (sex)	Agreement (sex)	N	κ value (age)	Agreement (age)
Apple Down	21	0.73	Substantial	30	0.80	Substantial
Butler's Field	16	0.54	Moderate	26	0.81	Almost perfect
Edix Hill	22	0.77	Substantial	23	0.89	Almost perfect
Finglesham	20	0.71	Substantial	24	0.77	Substantial
Norton East Mill	19	0.37	Fair	22	0.78	Substantial
St. Anne's Hill[1]	22	0.60	Moderate	20	0.77	Substantial
St. Anne's Hill[2]	22	0.69	Substantial	21	0.78	Substantial
Watchfield	19	0.73	Substantial	22	0.83	Almost perfect
Windmill Hill	24	0.76	Substantial	27	0.87	Almost perfect
Worthy Park	18	0.83	Almost perfect	25	0.77	Substantial
Bevis's Grave	20	0.61	Substantial	19	0.59	Moderate
Bishopsmill School	23	0.51	Moderate	19	0.90	Almost perfect
Staunch Meadow	17	0.59	Moderate	23	0.89	Almost perfect
Water Lane	24	0.74	Substantial	26	0.88	Almost perfect
Black Gate	22	0.75	Substantial	23	1.00	Perfect
Elstow Abbey	26	0.56	Moderate	24	0.76	Substantial
Priory Orchard	26	0.51	Moderate	16	0.74	Substantial
Raunds	14	0.85	Almost perfect	29	0.92	Almost perfect
St. Peter's Church	22	0.63	Substantial	18	0.64	Substantial

NB: Burwell is not included as all analysis was performed by the current author; orange shading represents fair or moderate agreement; [1]= analysis by Sibun (2016); [2]= analysis by Forsyth and Seaman (2015).

Agreement between the current author and previous researchers with regards to sex and age was substantial or almost perfect at a majority of the sites. In general, agreement was better in populations which had been analysed with

more recent methods (e.g. St. Anne's Hill, Windmill Hill, Raunds, Black Gate), but this was not always the case (e.g. Bishopsmill School, Priory Orchard). In addition, agreement could still be substantial or almost perfect in populations which were analysed less recently (e.g. Apple Down, Finglesham, Worthy Park). Agreement was poorer when previous analysis of the population was performed by different researchers (e.g. Elstow Abbey, Priory Orchard).

All the sites analysed by the current author were included in the project as they all had moderate, substantial, or almost perfect agreement, except for Norton East Mill which only had fair agreement with regards to sex assessment (see Section 6.1.2). The sites for which there was only fair or moderate agreement with regards to sex or age data comparison are discussed below.

6.1.1 Butler's Field

Harman (1998) recorded that BF-147 was a female, however, the current author's analysis determined that this individual was male based on pelvic morphology, skull features, and metrics. Thus, it is possible that the recording of BF-147 as a female by Harman (1998) was a typographical error in the monograph. If this individual is removed from the Cohen's weighted kappa test, the κ value is 0.681 (substantial agreement) with regards to sex assessment. However, Harman's (1998) data were used for BF-147 because a re-assessment of the entire burial population for sex was not feasible.

6.1.2 Norton East Mill

There was a low κ value (0.37) for the agreement between the current author and Marlowe (1992) with regards to sex assessment at Norton East Mill. In many cases Marlowe (1992) assigned a definite sex when the remains were too incomplete to make a sex assessment. Due to this disagreement, it was determined that the entire population should be re-assessed for sex. Although the age estimations generally agreed between Marlowe (1992) and the current author (κ =0.78), as each skeleton had to be assessed for sex, it was decided that age would be re-evaluated as well by the current author. This was performed for the entire population (N=118) following the methods outlined in Sections 4.3.1 and 4.3.2.

6.1.3 St. Anne's Hill

As the data provided by Forsyth and Seaman (2015) was more consistent with the current author's data (κ=0.69 for sex; κ=0.78 for age) than the data provided by Sibun (2016) (κ=0.60 for sex; κ=0.77 for age), the data provided by Forsyth and Seaman (2015) were utilised in all subsequent analysis.

6.1.4 Bevis's Grave

There was only moderate agreement between the current author and Shennan (1978) with regards to age estimation (κ=0.59). The lower kappa value was probably influenced by the fact that only 20 of the skeletons could be included for age comparison analysis because those individuals classified as adult, non-adult, or unaged could not be included (see Section 4.3.4). As demonstrated in Table 6.3, there was relatively good qualitative agreement between the current author and Shennan (1978) with regards to the individuals who could *not* be included in the Cohen's weighted kappa test for age comparison.

Table 6.3- Non-statistical comparison of the individuals from Bevis's Grave who could not be included in the Cohen's weighted kappa test for age.

Ind. no.	Age category (Bohling)	Age (Shennan 1978)	Translated age category (Shennan 1978)
BGR-11	Adult	Adult	Adult
BGR 22	Unaged	Young	Unaged
BGR 28	Unaged	Unaged	Unaged
BGR 29	Younger child	Sub-adult	Non-adult
BGR 38	Adult	Possible young adult	Adult
BGR 39	Younger adult	Possibly young adult	Adult
BGR 49	Unaged	?Infant	Unaged
BGR 59	Unaged	?Adult	Adult
BGR 64	Unaged	Unaged	Unaged
BGR 77	Younger adult	?c. 30+ years	Adult
BGR 79	Older adult	?c. 40+ years	Adult

Had it been possible to include these individuals in an age category that was appropriate for use with Cohen's weighted kappa test, it is likely that agreement between the two authors would have been higher. Although it is not ideal that the weighted κ value only indicates moderate agreement between the current author and Shennan (1978) with regards to age estimation, there was

insufficient time for a re-analysis of the entire burial population by the current author. Bevis's Grave was included in this research because the age estimations between the current author and Shennan (1978) still moderately agree, but it is acknowledged that the age estimations provided by Shennan (1978) are not entirely consistent, and a full re-evaluation of the skeletons with regards to age estimation would be beneficial.

6.1.5 Bishopsmill School

There was only moderate agreement between the current author and Johnson (2005) with regards to sex assessment. The low κ value for sex comparison was surprising, as when the sex assessments of the current author and Johnson (2005) are compared qualitatively, there do not appear to be any considerable differences (Table 6.4).

Table 6.4- Sex data comparison between the current author and Johnson (2005) for the adult individuals from Bishopsmill School.

Ind. no.	Sex (Bohling)	Sex (Johnson 2005)
BMS-3	Possible male (US)	Probable male
BMS-84	Probable male	Unsexed
BMS-223	Unsexed	Unsexed
BMS-229	Unsexed	Unsexed
BMS-237	Unsexed	Probable female
BMS-249	Probable female	Unsexed
BMS-268	Probable male	Probable male
BMS-294	Unsexed	Unsexed
BMS-298	Unsexed	Unsexed
BMS-303	Possible male (US)	Unsexed
BMS-313	Probable male	Unsexed
BMS-330	Male	Male
BMS-336	Probable male	Probable female
BMS-352	Unsexed	Unsexed
BMS-360	Male	Probable male
BMS-370	Female	Female
BMS-422	Female	Probable female
BMS-426	Female	Probable female
BMS-427	Male	Male
BMS-468	Unsexed	Unsexed
BMS-478	Female	Unsexed
BMS-493	Probable male	Unsexed
BMS-494	Unsexed	Unsexed

NB: the current author's possible male/female translated to unsexed for Cohen's weighted kappa testing (Appendix 1: Section 12.1); green shading indicates perfect agreement, yellow shading indicates data categories differed by one weighted group, red shading indicates data categories differed by more than one weighted group.

Seven individuals were not included in the Cohen's weighted kappa test for sex comparison as they were either non-adult or could not be confirmed to be adult or non-adult by one of the authors. Of the 23 individuals included in the test, there were 11 perfect matches, and only two instances of assessment that differed by more than one weighted group. Thus, the data provided by Johnson (2005) were considered suitable for use in this project. It should be noted that had there been better preservation of the skeletons, the sex assessments of the current author and Johnson (2005) would probably have matched to a greater degree.

6.1.6 Staunch Meadow

There was only moderate agreement between the current author and Anderson (1990) with regards to sex assessment. Thirteen individuals were not included in the Cohen's weighted kappa test for sex comparison, as they were either non-adult or could not be confirmed to be adult or non-adult by one of the authors. Of the 17 individuals included in the test, there were ten perfect matches, and only three instances of assessment that differed by more than one weighted group (Table 6.5). Two of these instances involved individuals recorded as possible male/females by the current author which were classified as unsexed to allow for statistical comparison with Anderson's (1990) data therefore resulting in a difference of more than one weighted group (Appendix 1: Section 14.1). It appears that Anderson (1990) assigned more definite sex categories than the current author. Although it is not ideal that the sex comparison agreement between the current author and Anderson (1990) was only moderate, the data provided by Anderson (1990) were considered suitable for use in this project. It is likely that had there been better preservation of the skeletons (which were friable and fragmentary), the sex assessments of the current author and Anderson (1990) would have matched to a greater degree.

Table 6.5- Sex data comparison between the current author and Anderson (1990) for the for adult individuals from Staunch Meadow.

Ind. no.	Sex (Bohling)	Sex (Anderson 1990)
SM-1497	Female	Probable male
SM-1541	Unsexed	Unsexed
SM-1830	Male	Male
SM-1860	Unsexed	Probable female
SM-1882	Female	Female
SM-1900	Unsexed	Probable male
SM-1917	Male	Male
SM-3072	Male	Male
SM-4002	Unsexed	Unsexed
SM-4009	Female	Female
SM-4021	Probable male	Male
SM-4038	Probable male	Male
SM-4050	Possible female (US)	Female
SM-4055	Male	Male
SM-4081	Unsexed	Unsexed
SM-8011	Unsexed	Unsexed
SM-8015	Possible male (US)	Male

NB: the current author's possible male/female translated to unsexed for Cohen's weighted kappa testing (Appendix 1: Section 14.1); green shading indicates perfect agreement, yellow shading indicates data categories differed by one weighted group, red shading indicates data categories differed by more than one weighted group.

6.1.7 Burwell

The original analysis of the burial population took place in the early 20th century, no methods were cited, and not all of the individuals were assigned a sex or age. Therefore, a full re-analysis of the skeletal collection (N=146) by the current author following the osteological methods outlined in Sections 4.3.1 to 4.3.3 was necessary. The current author's osteological data was used in all subsequent analysis.

6.1.8 Elstow Abbey

There were 293 LAS individuals in the Elstow Abbey collection, 196 (67%) of which had been previously analysed at the time of the current author's access. Osteological work had been performed by various researchers including Don Brothwell and Annie Grant in the 1970s and Anne Stirland in the late 1980s to early 1990s (Baker 2016). The current author was granted access to digital scans of the original recording forms for each skeleton, and attempted to assign an age and sex to each individual based on the information provided.

Anne Stirland analysed 104 individuals (35%), and almost always included a sex assessment, age estimation, and a description of pathologies (Appendix 1: Section 17.1). Don Brothwell and Annie Grant analysed 92 individuals (31%). The level of recording varied widely for these individuals, and in many cases, although an individual had a recording form, the sex or age was not included (Appendix 1: Section 17). In several cases, a single individual had been analysed by multiple researchers and their conclusions were in conflict with one another. At times it was possible to discern more detailed information from the recording forms, which allowed the current author to determine the appropriate age category for the individual (i.e., drawings of dental attrition, dental eruption tables). However, in other cases, it was impossible to resolve the conflict between the previous researchers and the individual was recorded as unaged or unsexed. The osteological data was gathered by the current author from the various sources and compiled into a single database.

Cohen's weighted kappa tests for sex and age were performed on 30 randomly sampled individuals from the Elstow Abbey burial population which had already been analysed by a previous researcher. Only moderate agreement in terms of sex assessment was found between the current author and previous researchers, suggesting that there was a definite difference in the methods utilised for sex assessment. For example, EA-59 was recorded by the previous researcher as having a male skull and metrics, but a female pelvis, and was classified as a probable male. The current author also recorded a male skull and a female pelvis, but as the pelvis is a better indicator of sex (Section 4.3.1), the individual was recorded as a female. Additionally, EA-144 appears to have been analysed three times. The first time it was recorded as female and the second time as male, with no explanation provided in either case. The third time, the skull was recorded as male, and a note was made that the pelvis was "rather feminine", but that the individual was "probably male". The current author recorded EA-144 as a female.

Although it is not ideal that the agreement between the sex data of the current author and previous researchers was only moderate, re-analysis of the entire burial population by the current author was not feasible, and the previous researchers' data were considered sufficiently accurate for use in this research. However, sex assessment methods have improved since the 1970s and 1980s,

and a re-analysis of the entire burial population with regards to sex is recommended. Although the sex assessment data from previous researchers were utilised, it should be kept in mind that the sex distribution provided for this burial population may not be entirely accurate, and a re-analysis of the burial population would probably change the sex distribution.

Although some non-physically impairing alterations were not noted by Anne Stirland (see Appendix 3: Section 16.1), she generally included much more detailed palaeopathological analyses than the current author, and her overall analysis was considered comprehensive enough for inclusion in this research. The palaeopathological descriptions of the individuals analysed by Grant and colleagues were much more variable, and while some alterations were recorded, others, which may have potentially been physically impairing (e.g. fracture of the right ulna in EA-53), were not. Although the current author reviewed all recording forms to identify possible cases of physical impairment, it remains a possibility that there were individuals that did have alterations consistent with physical impairment that were not recorded by Grant and colleagues. In addition, it is also possible that there were physically impairing alterations in the 83 individuals who were not analysed by the current author or previous researchers. Thus, the level of previous palaeopathological analysis was comprehensive for some individuals, but not for others. It should therefore be kept in mind that the following analysis of physical impairment at Elstow Abbey is hindered by the variability of palaeopathological recording, and it is possible that further examples of physical impairment existed in this burial population that were not possible to identify within the timescale of this research.

6.1.9 Priory Orchard

There was only moderate agreement between the current author and previous researchers with regards to sex assessment. Of the 26 individuals included in the Cohen's weighted kappa test for sex, there were 12 perfect matches, and four instances of assessment that differed by more than one weighted group (Table 6.6). It appears that the previous researchers attributed a definite sex more frequently than the current author. Another factor that may have affected previous sex assessment is the fact that the individuals at Priory Orchard were analysed by multiple students. Although overall age and sex analysis was

checked by a supervisor, it is certainly possible that different researchers had different definitions of a definite, probable, and possible male/female. In addition, in some cases, a definite sex was recorded based only on analysis of cranial features, whereas the current author would have recorded a probable sex due to the lack of a pelvis. Although it is not ideal that the sex comparison agreement between the current author and previous researchers was only moderate, the data provided by the previous researchers were considered suitable for use in this research. It is also likely that, had there been better preservation, the sex assessments of the current author and previous researchers would have matched to a greater degree.

Table 6.6- Sex data comparison between the current author and previous researchers for the adult individuals from Priory Orchard.

Ind. no.	Sex (Bohling)	Sex (Previous)
PO-1005	Female	Female
PO-1022	Male	Male
PO-1023	Male	Male
PO-1027	Unsexed	Male
PO-1033	Male	Male
PO-1038	Male	Male
PO-1040	Unsexed	Probable male
PO-1042	Probable male	Probable male
PO-1049	Male	Male
PO-1052	Unsexed	Probable female
PO-1058	Unsexed	Unsexed
PO-1063	Probable female	Female
PO-1064	Probable male	Male
PO-1068	Unsexed	Unsexed
PO-1072	Probable male	Male
PO-1092	Probable male	Male
PO-1108	Unsexed	Unsexed
PO-1113	Possible male (US)	Probable male
PO-3107	Unsexed	Probable female
PO-3248	Probable female	Female
PO-3258	Male	Male
PO-3283	Probable male	Male
PO-3328	Unsexed	Male
PO-3331	Possible female (US)	Male
PO-3336	Unsexed	Unsexed
PO-3391	Probable male	Female

NB: the current author's possible male/female translated to unsexed for Cohen's weighted kappa testing (Appendix 1: Section 18.1); green shading indicates perfect agreement, yellow shading indicates data categories differed by one weighted group, red shading indicates data categories differed by more than one weighted group.

In summary, the osteological data provided by previous researchers was utilised for 17 of the 19 sites: all individuals from Norton East Mill and Burwell were re-analysed by the current author due to the lack of consistent previous data. Several sites produced only moderate agreement between the current author and previous researchers. Due to time and financial constraints, the demographic data from these sites were utilised for this research with a note about possible inconsistencies of the previous osteological data, particularly at Bevis's Grave and Elstow Abbey, which were analysed with less modern sex assessment and age estimation techniques.

6.2 Demographic analysis

Excluding Norton East Mill and Burwell, the demographic data provided by previous osteological research were utilised in this research to determine the age and sex distribution of each burial population. For Norton East Mill and Burwell, the osteological data gathered by the current author were utilised. Further details on the categorisation of the previous osteological data, analysis of bone preservation and state of completeness (where possible), and graphs of sex distribution and age distribution including each age category (i.e., infant, younger child, older child) are provided in Appendix 1.

The overall sample consisted of 3,646 individuals from 19 sites (nine EAS, five MAS, and five LAS cemeteries) (Table 6.7). About half (50.4%) of the analysed individuals came from LAS cemeteries. Although only five sites were analysed, LAS cemeteries tended to be considerably larger than those of the EAS and MAS periods. The nine EAS cemeteries consisted of 1,261 individuals (34.6% of entire sample). Only five relatively small MAS cemeteries were analysed (n=548, 15.0%) as cemeteries which can definitively be identified as MAS are relatively rare and tend to be smaller.

Table 6.7- Period and site distribution of the entire sample population.

	N	% entire sample
Early Anglo-Saxon	1261	34.6
Apple Down	125	3.4
Butler's Field	223	6.1
Edix Hill	148	4.1
Finglesham	223	6.1
Norton East Mill	118	3.2
St. Anne's Hill	192	5.3
Watchfield	43	1.2
Windmill Hill	85	2.3
Worthy Park	104	2.9
Middle Anglo-Saxon	548	15.0
Bevis's Grave	84	2.3
Bishopsmill School	89	2.4
Burwell	146	4.0
Staunch Meadow	176	4.8
Water Lane	54	1.5
Later Anglo-Saxon	1837	50.4
Black Gate	590	16.2
Elstow Abbey	293	8.0
Priory Orchard	121	3.3
Raunds	379	10.4
St. Peter's Church	453	12.4
Total	3,646	100.0

6.2.1 Age

The maturity status distribution (adult versus non-adult) for the entire sample (including unaged individuals) is provided in Figure 6.1. The percent maturity status distribution (excluding unaged adults, unaged non-adults, and unaged individuals) for each time period is provided in Figure 6.2. It should be noted that Priory Orchard is excluded from analysis for Figure 6.2 and Table 6.8 because, as demonstrated in Table 6.9, Priory Orchard was identified as an outlier with a very high adult to non-adult ratio (28.25). As only a portion of the cemetery was excavated, it is possible that the excavated Priory Orchard burial population was from a burial zone more reserved for adults. Because the entire excavated Priory Orchard burial population has not yet been fully analysed (Appendix 1: Section 18.2), it is also possible that adults were preferentially analysed, and it is likely that the analysed sample utilised in this research is not representative of the entire excavated burial population.

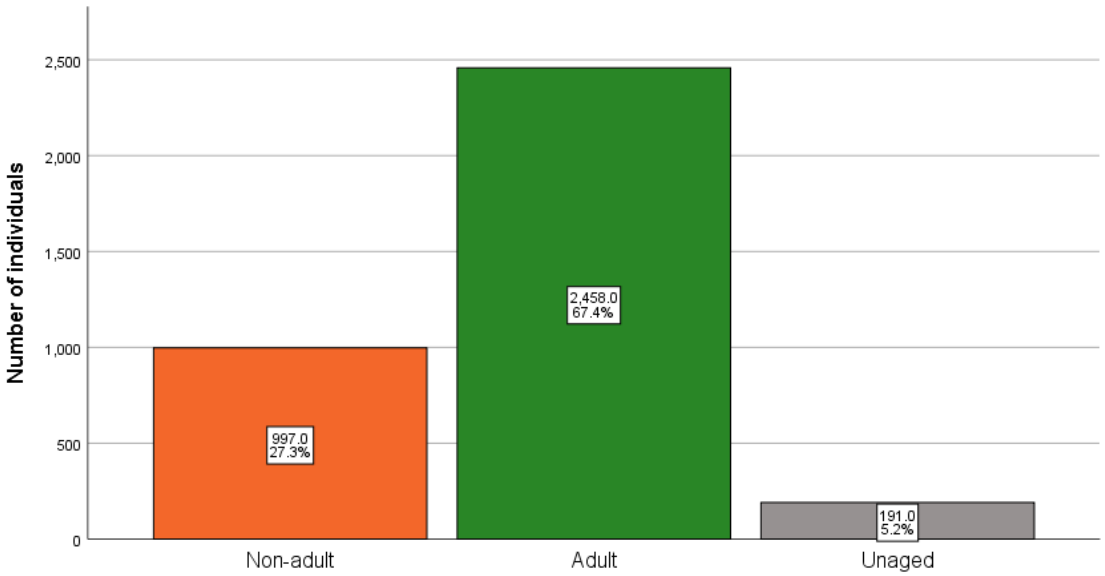

Figure 6.1- Maturity status distribution for the overall sample population including unaged individuals.

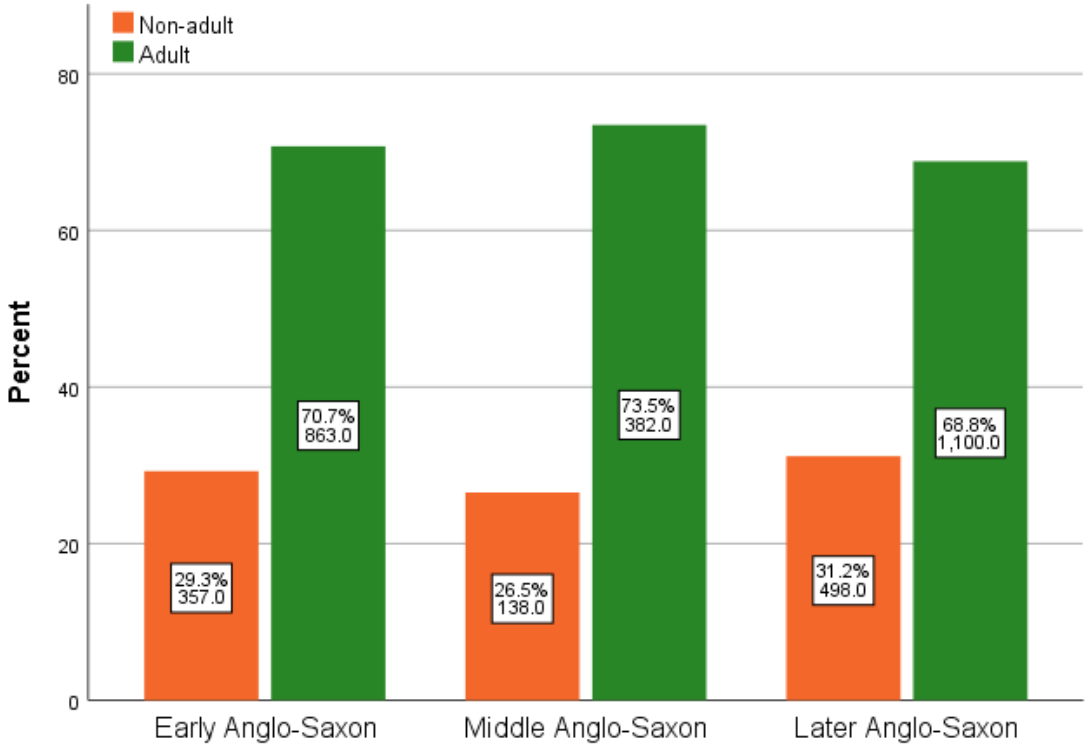

Figure 6.2- Maturity status distributions for the EAS, MAS, and LAS periods excluding unaged adults, unaged non-adults, and unaged individuals. NB: Priory Orchard is not included.

At all sites, there was a considerable under-representation of non-adult individuals, as is commonly found in Anglo-Saxon cemeteries (Buckberry 2000). Upon closer examination of the distribution of the age groups within the non-adult individuals, it is evident that from the EAS period to the LAS period, there is an increase in the percentage of foetuses, infants, and younger children buried,

while the differences between the percentages of older children and adolescents is not as noticeable (Table 6.8).

Table 6.8- Distribution of non-adult age groups for each time period excluding unaged non-adults.

Age category	EAS (n=1,013)		MAS (n=406)		LAS (n=1,278)	
	N	%	N	%	N	%
Foetus	8	0.8	2	0.5	23	1.8
Infant	26	2.6	16	3.9	135	10.6
Younger child	126	12.4	29	7.1	179	14.0
Older child	96	9.5	30	7.4	87	6.8
Adolescent	80	7.9	33	8.1	42	3.3
Young adult	193	19.1	71	17.5	110	8.6
Middle adult	350	34.6	158	38.9	455	35.6
Older adult	134	13.2	67	16.5	247	19.3

NB: Priory Orchard is not included.

It is possible that the lower frequency of non-adults in the EAS cemeteries is due to poorer preservation of smaller and less dense bones (Buckberry 2000), however only sites with relatively good bone preservation were selected for this research. Lucy (1994) proposes that the higher percentage of non-adults in LAS cemeteries than EAS cemeteries is potentially linked with changing religious ideologies. In line with this, Williams-Ward (2017) proposes that in the EAS period, non-adults were more frequently cremated, and therefore, as cremation became less popular (which may have been influenced by conversion to Christianity), non-adults began to appear in higher percentages in LAS inhumation cemeteries.

The maturity status distribution (including unaged individuals) for each site is provided in Figure 6.3. A summary of the maturity status distribution for each site is provided in Table 6.9, including corresponding percentages of the total population, corresponding percentages of the aged population (excluding unaged individuals), and the adult to non-adult ratios.

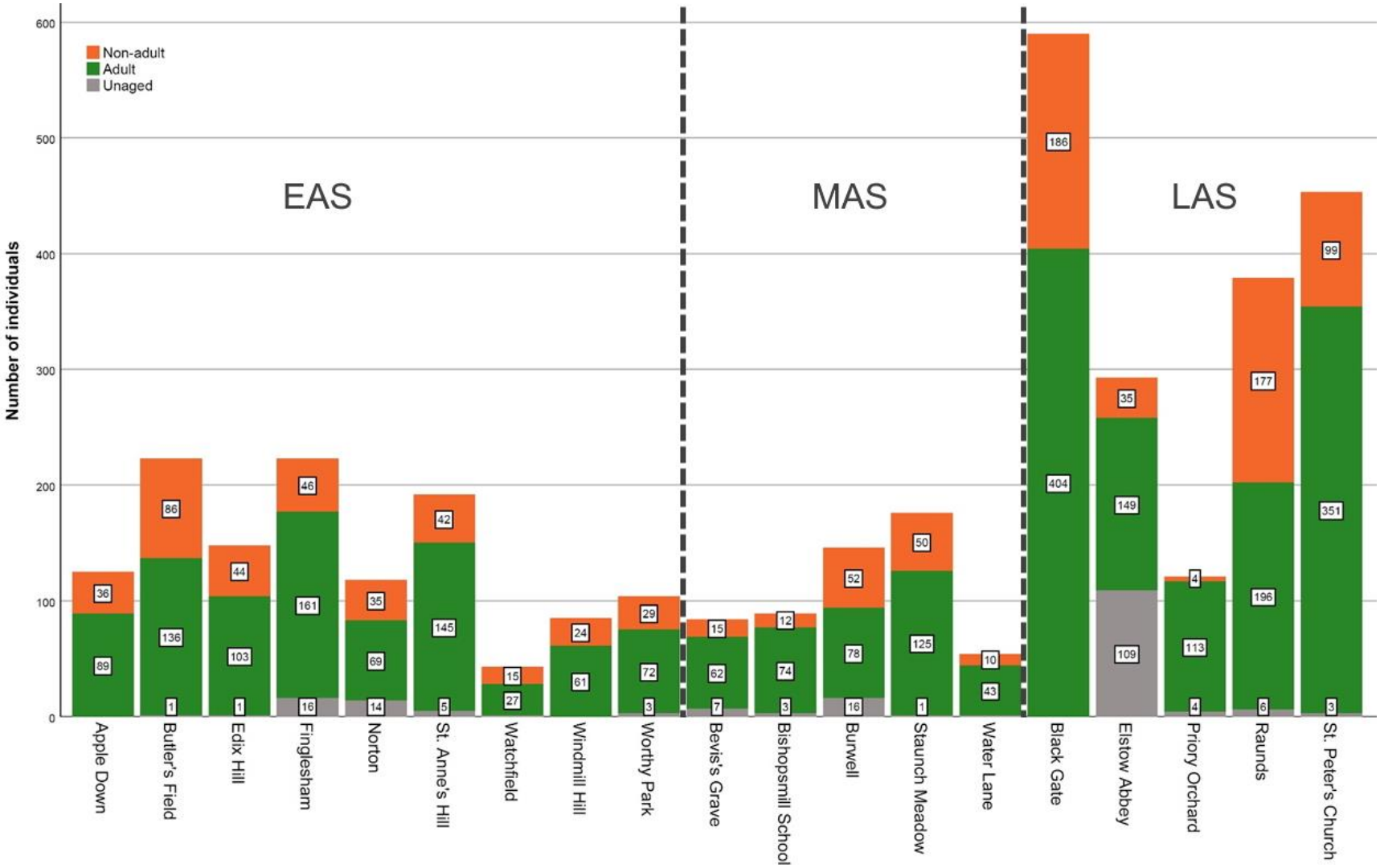

Figure 6.3- Maturity status distributions for each site including unaged individuals.

Table 6.9- Summary of maturity status distributions for all sites.

Site	N_{total}	Maturity status	N	$\%_{total}$	$\%_{aged}$	A:NA ratio
Early Anglo-Saxon						
Apple Down	125	Non-adult	36	28.8	28.8	2.57
		Adult	89	71.2	71.2	
		Unaged	0	0.0	-	
Butler's Field	223	Non-adult	86	38.6	38.7	1.58
		Adult	136	61.0	61.3	
		Unaged	1	0.4	-	
Edix Hill	148	Non-adult	44	29.7	29.9	2.34
		Adult	103	69.6	70.1	
		Unaged	1	0.7	-	
Finglesham	223	Non-adult	46	20.6	22.2	3.50
		Adult	161	72.2	77.8	
		Unaged	16	7.2	-	
Norton	118	Non-adult	35	29.7	33.7	1.97
		Adult	69	58.5	66.3	
		Unaged	14	11.9	-	
St. Anne's Hill	192	Non-adult	42	21.9	22.5	3.45
		Adult	145	75.5	77.5	
		Unaged	5	2.6	-	
Watchfield	43	Non-adult	15	34.9	35.7	1.80
		Adult	27	62.8	64.3	
		Unaged	1	2.3	-	
Windmill Hill	85	Non-adult	24	28.2	28.2	2.54
		Adult	61	71.8	71.8	
		Unaged	0	0	-	
Worthy Park	104	Non-adult	29	27.9	28.7	2.48
		Adult	72	69.2	71.3	
		Unaged	3	2.9	-	
Middle Anglo-Saxon						
Bevis's Grave	84	Non-adult	15	17.9	19.5	4.13
		Adult	62	73.8	80.5	
		Unaged	7	8.3	-	
Bishopsmill School	89	Non-adult	12	13.5	14.0	6.17
		Adult	74	83.1	86.0	
		Unaged	3	3.4	-	
Burwell	146	Non-adult	52	35.6	40.0	1.50
		Adult	78	53.4	60.0	
		Unaged	16	11	-	
Staunch Meadow	176	Non-adult	50	28.4	28.6	2.50
		Adult	125	71.0	71.4	
		Unaged	1	0.6	-	
Water Lane	54	Non-adult	10	18.5	18.9	4.30
		Adult	43	79.6	81.1	
		Unaged	1	1.9	-	

Site (cont'd)	N_{total}	Maturity status	N	$\%_{total}$	$\%_{aged}$	A:NA ratio
Later Anglo-Saxon						
Black Gate	590	Non-adult	186	31.5	31.5	2.17
		Adult	404	68.5	68.5	
		Unaged	0	0.0	-	
Elstow Abbey	293	Non-adult	35	11.9	19.0	4.26
		Adult	149	50.9	81.0	
		Unaged	109	37.2	-	
Priory Orchard	121	Non-adult	4	3.3	3.4	28.25
		Adult	113	93.4	96.6	
		Unaged	4	3.3	-	
Raunds	379	Non-adult	177	46.7	47.5	1.11
		Adult	196	51.7	52.5	
		Unaged	6	1.6	-	
St. Peter's Church	453	Non-adult	99	21.9	22.0	3.55
		Adult	351	77.5	78.0	
		Unaged	3	0.7	-	

NB: "total" includes unaged individuals, and "aged" excludes unaged individuals; A:NA= adult to non-adult ratio.

6.2.2 Sex

The sex distribution for the entire adult sample (including unsexed adult individuals) is provided in Figure 6.4. The sex distributions for the adult population (excluding unsexed adult individuals) for each of the time periods are provided in Figure 6.5. The sex distributions for the adult population (including unsexed adult individuals) for each site are provided in Figure 6.6. A summary of the sex distribution for each site is provided in Table 6.10, including corresponding percentages of the total adult population, corresponding percentages of the sexed adult population (excluding unsexed individuals), and the male to female ratios.

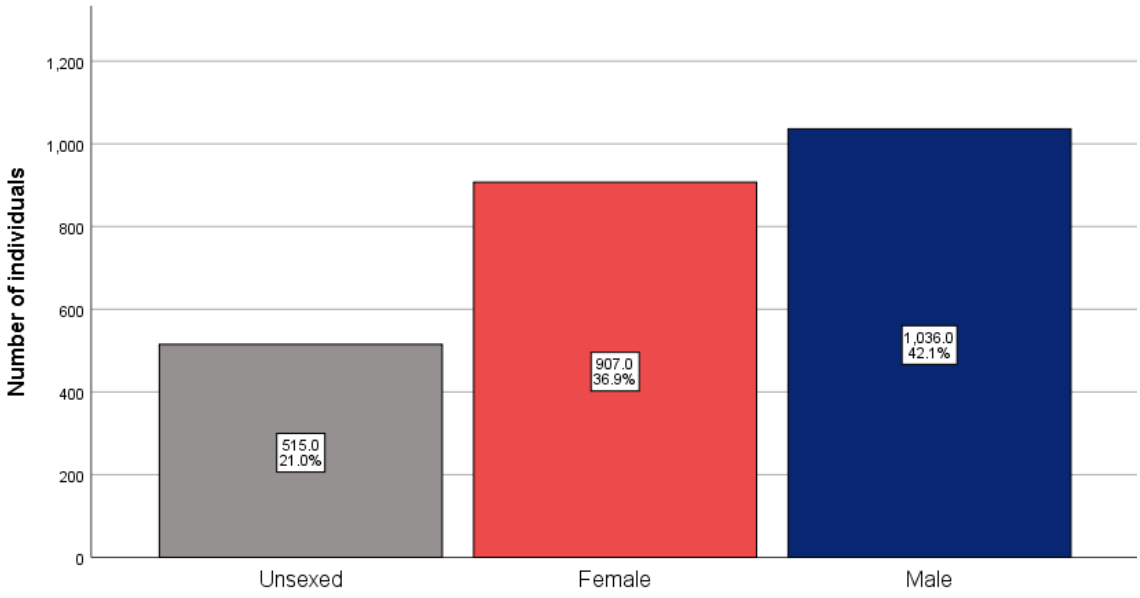

Figure 6.4- Sex distribution for the overall adult population including unsexed adult individuals.

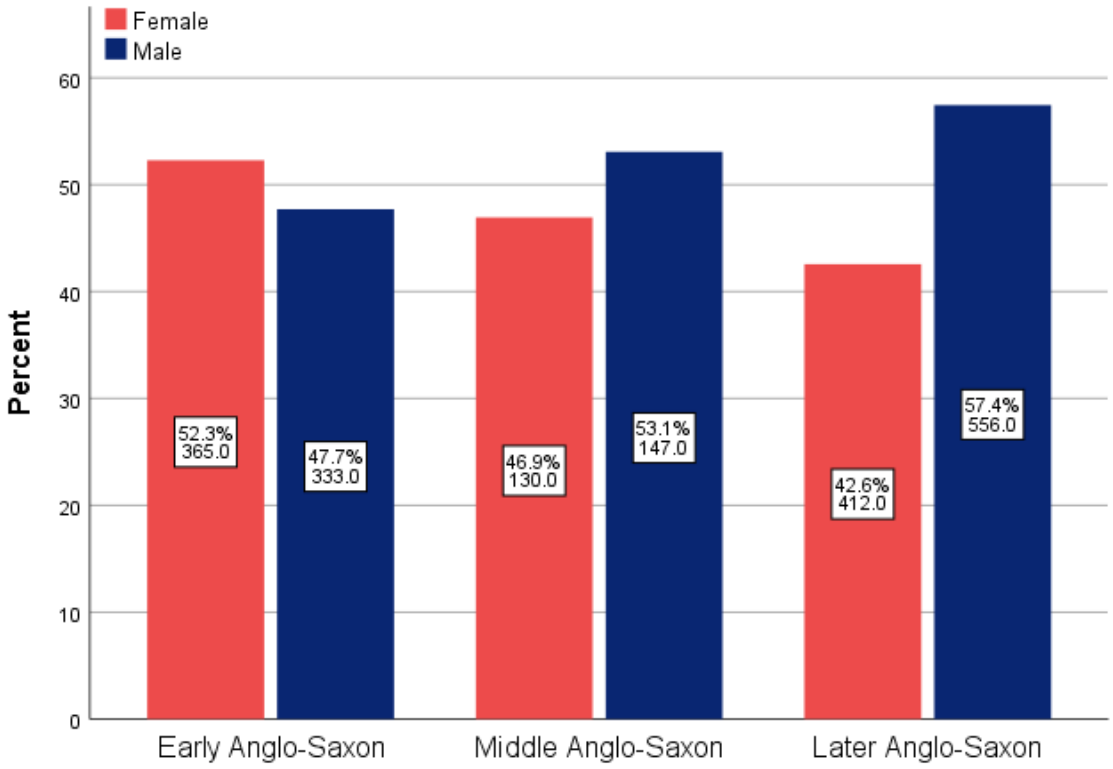

Figure 6.5- Sex distributions for the adult populations in the EAS, MAS, and LAS periods, excluding unsexed adult individuals.

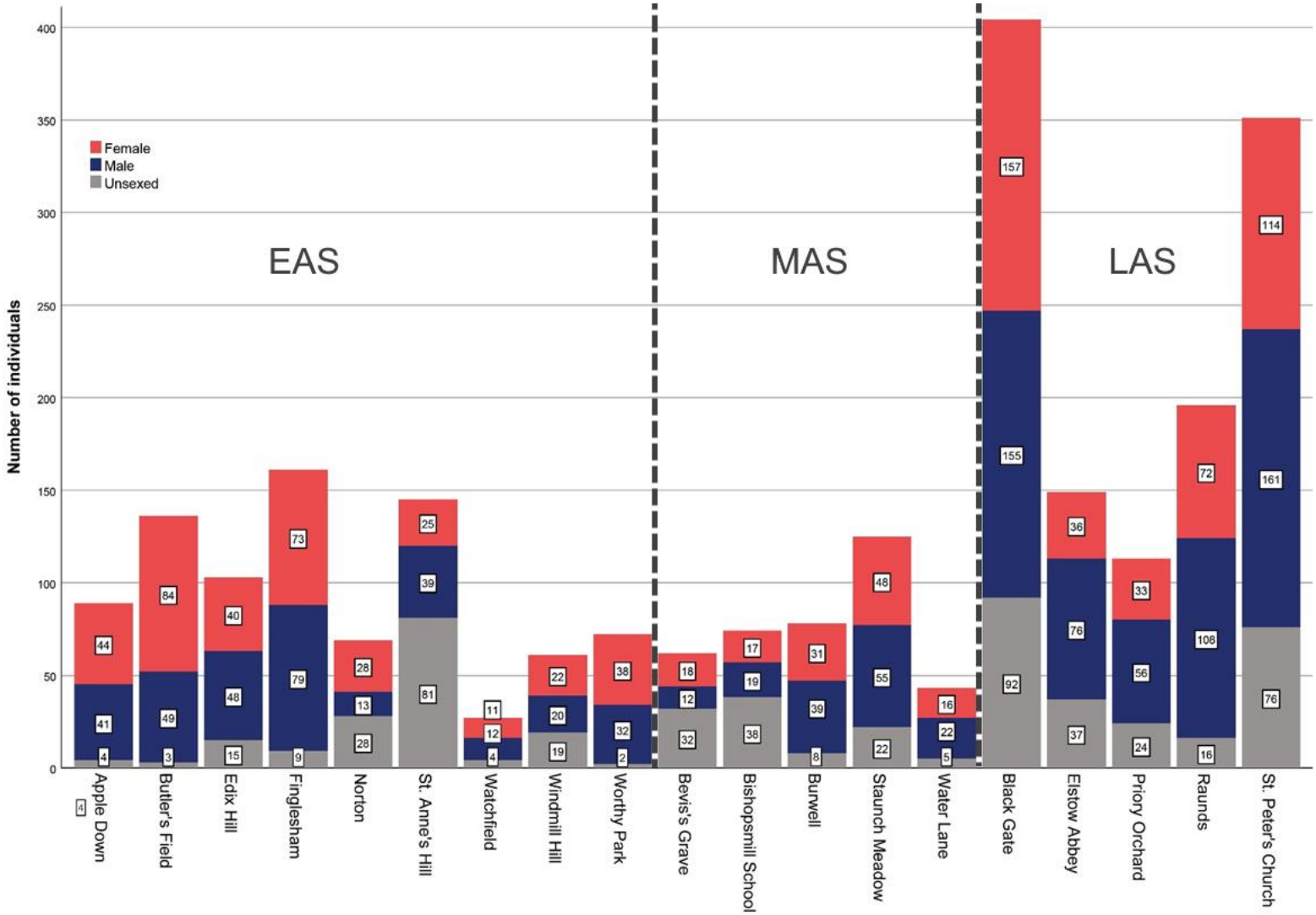

Figure 6.6- Sex distributions of the adult populations for each site, including unsexed adult individuals.

Table 6.10- Summary of adult sex distributions for all sites.

Site	N_{adult}	Sex	Frequency	$\%_{adult}$	$\%_{sexed}$	M:F ratio
Early Anglo Saxon						
Apple Down	89	Female	44	49.4	51.8	0.93
		Male	41	46.1	48.2	
		Unsexed	4	4.5	-	
Butler's Field	136	Female	84	61.8	63.2	0.58
		Male	49	36.0	36.8	
		Unsexed	3	2.2	-	
Edix Hill	103	Female	40	38.8	45.5	1.20
		Male	48	46.6	54.5	
		Unsexed	15	14.6	-	
Finglesham	161	Female	73	45.3	48.0	1.08
		Male	79	49.1	52.0	
		Unsexed	9	5.6	-	
Norton	69	Female	28	40.6	68.3	0.46
		Male	13	18.8	31.7	
		Unsexed	28	40.6	-	
St. Anne's Hill	145	Female	25	17.2	39.1	1.56
		Male	39	26.9	60.9	
		Unsexed	81	55.9	-	
Watchfield	27	Female	11	40.7	47.8	1.09
		Male	12	44.4	52.2	
		Unsexed	4	14.8	-	
Windmill Hill	61	Female	22	36.1	52.4	0.91
		Male	20	32.8	47.6	
		Unsexed	19	31.1	-	
Worthy Park	72	Female	38	52.8	54.3	0.84
		Male	32	44.4	45.7	
		Unsexed	2	2.8	-	
Middle Anglo-Saxon						
Bevis's Grave	62	Female	18	29.0	60.0	0.67
		Male	12	19.4	40.0	
		Unsexed	32	51.6	-	
Bishopsmill School	74	Female	17	23.0	47.2	1.12
		Male	19	25.7	52.8	
		Unsexed	39	51.4	-	
Burwell	78	Female	31	39.7	44.3	1.26
		Male	39	50.0	55.7	
		Unsexed	8	10.3	-	
Staunch Meadow	125	Female	48	38.4	46.6	1.15
		Male	55	44.0	53.4	
		Unsexed	22	17.6	-	
Water Lane	43	Female	16	37.2	42.1	1.38
		Male	22	51.2	57.9	
		Unsexed	5	11.6	-	

Site (cont'd)	N_{adult}	Sex	Frequency	$\%_{adult}$	$\%_{sexed}$	M:F ratio
Later Anglo-Saxon						
Black Gate	404	Female	157	38.9	50.3	0.99
		Male	155	38.4	49.7	
		Unsexed	92	22.8	-	
Elstow Abbey	149	Female	36	24.2	32.1	2.11
		Male	76	51.0	67.9	
		Unsexed	37	24.8	-	
Priory Orchard	113	Female	33	29.2	37.1	1.70
		Male	56	49.6	62.9	
		Unsexed	24	21.2	-	
Raunds	196	Female	72	36.7	40.0	1.50
		Male	108	55.1	60.0	
		Unsexed	16	8.2	-	
St. Peter's Church	351	Female	114	32.5	41.5	1.41
		Male	161	45.9	58.5	
		Unsexed	76	21.7	-	

NB: "adult" includes unsexed adult individuals, "sexed" excludes unsexed adult individuals; M:F= male to female ratio.

Overall there were more males than females (M:F=1.14). In the EAS cemeteries, males and females were more evenly represented with a male to female ratio of 0.91, a finding which is relatively uncommon due to the general robusticity of the male skeleton (Weiss 1972; Walker 1995). It is possible that males and females were being afforded different burial treatments in the EAS period, which resulted in the under-representation of males in the archaeological record. However, Squires (2013) found that females were more likely than males to be cremated in northern England (which should result in over-representation of inhumated males). Williams-Ward (2017) found that in communities where cremation was more common in Norfolk, it was actually more likely that mature adult males and young adult females were inhumated (which should result in more equal representation of males and females). Therefore, the reason for the under-representation of EAS males observed in this research remains unclear, but it does appear that, to an extent, EAS males in some communities were receiving burial treatment that was less likely to leave behind skeletal remains (cremation? excarnation?). It has been proposed that adult males were more likely to be in positions of power in the EAS period (Mui 2018) (Section 10.3.3). Perhaps the impressive spectacle of a cremation ceremony, which would require the building of a pyre and the lighting of a large fire whose smoke, flames, and heat would have affected the senses of the mourners more than an inhumation

ceremony (Williams 2004), was considered more appropriate for socially significant males. In this way, their death, and in turn their life, would be more visible and memorable in the funerary landscape.

In the LAS cemeteries, males were more common than females with a male to female ratio of 1.35. It is possible that because female skeletons are generally more gracile than male skeletons, preservation of the female individuals was worse than that of the male individuals, which may have biased the LAS sex distribution (Walker 1995). However, the marked increase in the male to female ratio between the EAS and LAS periods suggests that factors besides solely preservation levels were in effect, and it is possible that changing funerary opinions regarding both male and female burial treatment was affecting the male to female ratio in the LAS period.

This chapter has summarised the osteological methods utilised by previous researchers, outlined the statistical comparisons between the current author and previous researchers' osteological data for all 19 sites, and addressed the issues of consistency that were observed for several sites. This chapter has also summarised the demographic data for each site and for each period, and discussed the significance of the observed male to female and adult to non-adult ratios. For each of the 19 sites analysed, the following three chapters provide 1) the funerary treatment for the overall population and for the individuals with physical impairment, 2) the palaeopathological data collected and photographs taken for the individuals with physical impairment, and 3) contextualised interpretations regarding the funerary treatment of the individuals with physical impairment. A chronological sequence is followed: the EAS cemeteries are presented first (Chapter 7), followed by the MAS cemeteries (Chapter 8) and LAS cemeteries (Chapter 9). Within each chronological period, the cemeteries are presented in alphabetical order.

Chapter 7- Burial and impairment in early Anglo-Saxon England

7.1 Introduction

The following chapter discusses the results and interpretations from nine EAS cemeteries: Apple Down, Butler's Field, Edix Hill, Finglesham, Norton East Mill, St. Anne's Hill, Watchfield, Windmill Hill, and Worthy Park. Of the 1,261 EAS individuals, 40 individuals with physical impairment (3.2%) were identified. Each site is analysed separately to appreciate the considerable variability in funerary treatment in this period (Section 3.2). For each site (and for each MAS and LAS site in Chapters 8 and 9), the following is included:

1. A brief summary of the funerary treatment variables analysed for the entire burial population with appropriate references.
2. A table summarising the grave good frequencies and distribution (EAS and some MAS sites). For each grave good, the total number found in the cemetery and the number (and corresponding percentage) of graves in which the item was found are provided to investigate which grave goods should be considered unusual or rare. Individuals buried with only unidentifiable objects (e.g. iron fragment, strap end, copper sheet, stud) were recorded as having grave goods present, but the percentages of these objects were not calculated (Section 4.5.6).
3. A summary of the palaeopathological descriptions, differential diagnoses considered, and functional impacts for each of the individuals identified as potentially physically impaired by the current author based on previous research. Each individual was also categorised by the current author as having "possible", "probable", or "convincing" evidence of physical impairment. This was a subjective categorisation intended to distinguish between those individuals with an osteological alteration that almost certainly caused physical impairment (convincing evidence) and those who were more tentatively classified as physically impaired based on the osteological alterations observed (possible evidence). More detailed palaeopathological analysis including descriptions of lesions, additional photographs, and

more in-depth differential diagnoses are provided for each individual in Appendix 3.

4. Photographs of the pathological alterations observed for each individual identified as potentially impaired from previous research. All photographs included for palaeopathological analysis were taken by the current author unless otherwise stated. Note that only the most relevant photographs are included in the main text. Further photographs for each individual with physical impairment are provided in Appendix 3.
5. A summary of the funerary treatment of the individuals with physical impairment. This includes a map demonstrating their location in the cemetery and a summary of the included grave goods (EAS and some MAS sites).
6. A table including the percentage frequency of each category of funerary variable (i.e., what percent of individuals were extended, flexed, or crouched) to determine which burial treatment/s were most frequent, which were relatively common, and which were considered non-normative. To be considered non-normative, a funerary treatment type had to be present in less than 10% of the entire burial population. The same table includes the funerary treatment of the individuals with physical impairment to allow for a comparison of their burial treatment with the burial treatment of the remainder of the population.
7. Finally, interpretations of the observed mortuary treatment of the individuals with physical impairment are provided. These interpretations attempt to place the funerary rites into their site-specific, and period-wide contexts. Potential motivations for specific mortuary rituals are explored while also considering the inherent complexities involved with analysing funerary data from a biased, modern-day perspective (Section 3.1.2).

For each site, a table that compares the frequency of each type of funerary treatment between non-adults and adults and a table that compares the frequency of each type of funerary treatment between males and females are provided in Appendix 2. These tables were produced to investigate if specific funerary treatment types were reserved for certain age/sex groups, and to

determine whether the individuals with physical impairment were treated normatively with regards to their age and sex. For most of the sites, non-normative funerary treatment of the individuals with physical impairment with regards to their age or sex (e.g. a male individual with physical impairment was buried in a manner usually reserved for females) was not identified, but is discussed when observed.

7.2 Apple Down

7.2.1 General funerary treatment

The funerary treatment variables which were recorded for the Apple Down cemetery (late 5th to late 7th centuries) based on information provided by Down and Welch (1990) include grave orientation and location, body orientation and position, head/arm/leg position, and the presence of coffins/planks, stones, post-holes, timber structures, mounds, grave weathering, other individuals (multiple burial), and grave goods. A majority of the graves were oriented W-E (42.9%) or S-N (43.7%), excluding a small number of individuals buried at other less frequent orientations.

7.2.1.1 Body and limb positioning

A majority of the individuals were both supine (81.0%) and extended (76.1%). Burial in the crouched position (7.1%), and in the left side (7.8%) and prone (0.9%) orientations is considered non-normative in this population. Although it did not reach the non-normativity threshold established for this research, burial on the right side (10.3%) was also quite uncommon.

7.2.1.2 Structures and furniture

Coffins or plank-lined graves were somewhat frequent at Apple Down (possible/probable: 21.6%). A majority of these graves (N=14) were determined to have a coffin by the stone packing around the burial, while others were outlined in a dark charcoal-like material, which was probably the remains of wood. Five of the nine individuals in Cemetery 2 were buried in coffins and two were possibly buried in coffins, indicating that this funerary rite was more frequent in the later

cemetery than the earlier cemetery (see Section 5.3.1 for a discussion of the two cemeteries). AD-54 was buried with stone lining that was not indicative of a coffin, and AD-173 was buried with a 17kg flint placed over the ribcage.

Post-holes were observed in seven graves (5.6%), three of which were probably associated with above ground marker posts (Down and Welch 1990: 15). Timber structures were associated with only two graves (1.6%): a four-posted structure around AD-99B (older adult male) and a six-posted structure around AD-157 (older adult female). Down and Welch (1990: 15) argue that AD-62, AD-63, and AD-72 were possibly buried together under a mound, as they are positioned very close together in the same orientation.

Down and Welch (1990) report various degrees of weathering in five graves (4.0%). In the two graves with “considerable” weathering, Down and Welch (1990: 47, 49) suggest that this is evidence that the graves had been left open for some time after being dug. It is impossible to say whether these graves were dug in preparation for a death, or if they were left open for viewing of the deceased after the body had been arranged within the grave. Weathering may not have affected each grave to the same extent. Although most of the graves at Apple Down did not show signs of weathering, this cannot be taken as evidence that the graves were not left open for a period of time before closure.

7.2.1.3 Multiple burial

There was only one instance which was considered by Down and Welch (1990: 196-7) to be a contemporaneous burial: in Grave 41, AD-41A (older child) was buried in a right side crouched position directly above AD-41B (middle adult female) who was buried in a left side crouched position. There was also a cremation burial (AD-40) included at the head-end of this grave. There were six instances of graves being used for later burials which resulted in the disturbance and removal of the earlier burial.

7.2.1.4 Grave goods

Table 7.1 provides a summary of the grave good types and frequencies at Apple Down.

Table 7.1- Grave good types and frequencies for the Apple Down cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	43	34.4
Weaponry			
Spear	16	16	12.8
Shield	3	3	2.4
Seax	1	1	0.8
Sword	1	1	0.8
Dress accessories			
Buckle	36	35	28.0
Beads	171	17	13.6
Pin	6	6	4.8
Brooch	9	6	4.8
Finger ring	4	4	3.2
Spangles	2	1	0.8
Bangle	1	1	0.8
Needle	1	1	0.8
Tools and personal equipment			
Knife	51	51	40.8
Purse	5	5	4.0
Coins	5	6	4.0
Tweezers	3	3	2.4
Ring	2	3	1.6
Comb	1	1	0.8
Antler implement	1	1	0.8
Vessels and containers			
Wooden vessels	2 (+6 pos)	2 (+6 pos)	1.6 (6.4 pos)
Pot sherds	4	4	3.2
Pot	2	2	1.6

NB: pos= possible.

7.2.2 Palaeopathological analysis

Seven individuals were identified as potentially physically impaired (5.6% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.2. Refer to Appendix 3: Section 2.2 for detailed differential diagnoses for each individual.

Table 7.2- Summary of the palaeopathological analysis of the individuals with physical impairment from Apple Down.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
AD-7B	MA	F	- Ankylosis of L3 + L4 with irregular, reactive bony bridging - Four oval perforations in bony bridging (cloacae)	- **Tuberculosis** - **Vertebral osteomyelitis**	- Tenderness + fever - Limitation of movement - Neurological deficit if leakage into spinal canal (sensory loss, weakness)	Possible; acquired (med-long)	Figure 7.1
AD-39	YA	M	- Posterior displacement of proximal 1/3 of R femoral shaft - Internal rotation of distal joint surface	- **Well-healed, mis-aligned fracture**	- Probable abnormal gait	Probable; acquired (med-long)	Figure 7.2
AD-60	ADO	US	- Slender, gracile, short long bones (more marked in lower limbs) - Increased FNA - Length of L tibia→ age estimate of 10-11 years (extreme stunting) - Photographs show comparison with AD-79 (15-17-years old)	- Pituitary dwarfism - **Paraplegia or quadriplegia**: trauma to spinal cord, hereditary spastic paraplegia, muscular dystrophy poliomyelitis, CP	- Paralysis of lower limbs→ restricted movement - Urinary/anal incontinence, muscle spasms, + pressure ulcers - Visible disuse atrophy of arms + legs - Possible mental impairment (depending on condition)	Convincing; acquired (long)	Figure 7.3- Figure 7.4
AD-111	OA	F?	- Severe osteophytic lipping on inferior aspect of R femoral head with medial curvature - Articulation results in medial rotation of entire R femur	- **OA of the R hip**	- Adduction deformity→ probable restriction of movement + abnormal gait - Pain with radiation to buttock, knee, + shin - Difficulty with long periods of walking	Probable (end of life)	Figure 7.5

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
AD-120	MA	F	- Flattening + deformation of right mastoid - Large, oval perforation posterior to the EAM with thin but rounded edges	- Metastatic carcinoma - Mastoiditis - Osteomyelitis - **Giant cholesterol cyst** - **Acquired/congenital cholesteatoma**	- Possibly experienced impingement of cranial nerves → hearing loss, facial paralysis, + vertigo	Possible; acquired (long)	Figure 7.6
AD-152	YA	M	- Diffuse porous + smooth compact bone deposition throughout appendicular skeleton, sparing joint surfaces (Figure 7.7) - Destruction of central + L side of frontal bone (some lytic, some taphonomic)	- Cranium: osteomyelitis, TB, multiple myeloma, LCH, treponemal disease - Post-cranial: osteomyelitis, **treponemal disease**, **HOA**	- Treponemal disease: bone pain, soft tissue swelling, fever, tenderness, rash, syphilitic meningitis (confusion, deafness, ocular deficiencies), gummatous syphilis, + late neurosyphilis (vertigo, seizure, dementia, etc.) - HOA: deep aching or burning pain in affected areas, joint swelling, restricted movement, possible cutaneous involvement, + secondary HOA associated with severe internal illness	Probable; acquired (med-long)	Figure 7.8-Figure 7.9
AD-171	MA	US	- Irregular, jagged bone deposition on distal end of L tibia + fibula	- Osteomyelitis - **Non-specific inflammation**	- Chronic, long-standing inflammation: swelling, redness, heat, + pain→ possible restricted movement	Probable; acquired (med-long)	Figure 7.10

NB: differential diagnoses in **bold** are considered the most likely.

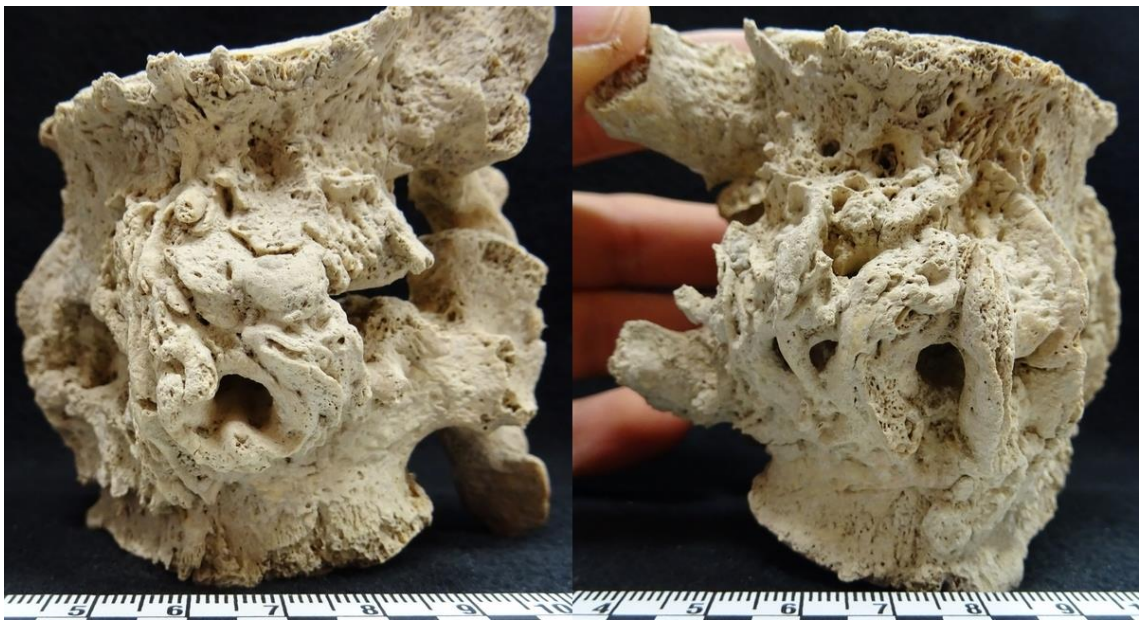

Figure 7.1- Perforations with smooth, rounded edges (cloacae) in the left and right bony bridging between L3 and L4 of AD-7B. © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.2- Posterior displacement of the proximal third of the right femoral shaft of AD-39. © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.3- Comparison in size and length of the right femur of AD-60 (bottom) and the left femur of AD-79 (15-17-year old) (top). © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.4- Comparison of the right humeri of AD-60 (bottom) and AD-79 (15-17-year old) (top). © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.5- Articulation of the right femur and pelvis of AD-111 demonstrating medial angulation of the femur. © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.6- Large perforation with thin but rounded edges posterior to the EAM of AD-120.

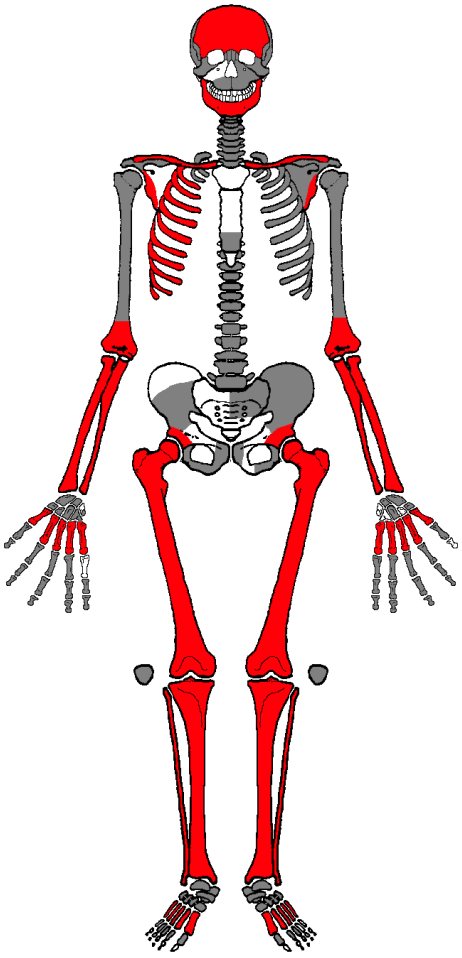

Figure 7.7- Distribution of the pathological lesions observed in AD-152 (red). NB: Grey indicates which elements were present for analysis.

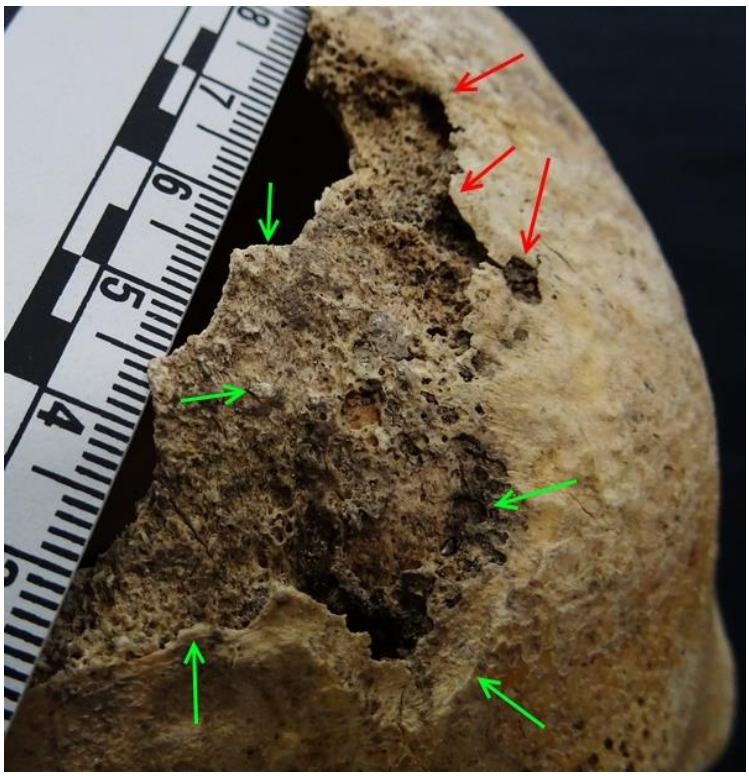

Figure 7.8- Large area of probable taphonomic destruction on the frontal bone of AD-152 (green arrows) with some areas of lytic destruction (red arrows). © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.9- Layers of PNB deposition on the left fibula of AD-152. © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

Figure 7.10- Irregular, jagged PNB deposition on a distal fragment of the left fibula of AD-171. © The Novium Museum (a service provided by Chichester District Council). All rights reserved.

7.2.3 Funerary treatment of the individuals with physical impairment

The cemetery was fully excavated and the margins were well-established. As demonstrated in Figure 7.11 and Figure 7.12, there was no clustering of the individuals with physical impairment, nor were they buried in isolated locations. AD-171 is buried on the eastern margin of Cemetery 1, however they are buried alongside three other graves with almost identical funerary treatment, and have been interpreted as a family group (Down and Welch 1990: 16). AD-120 is buried near the western limit of the cemetery but is not in isolation.

Table 7.3 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

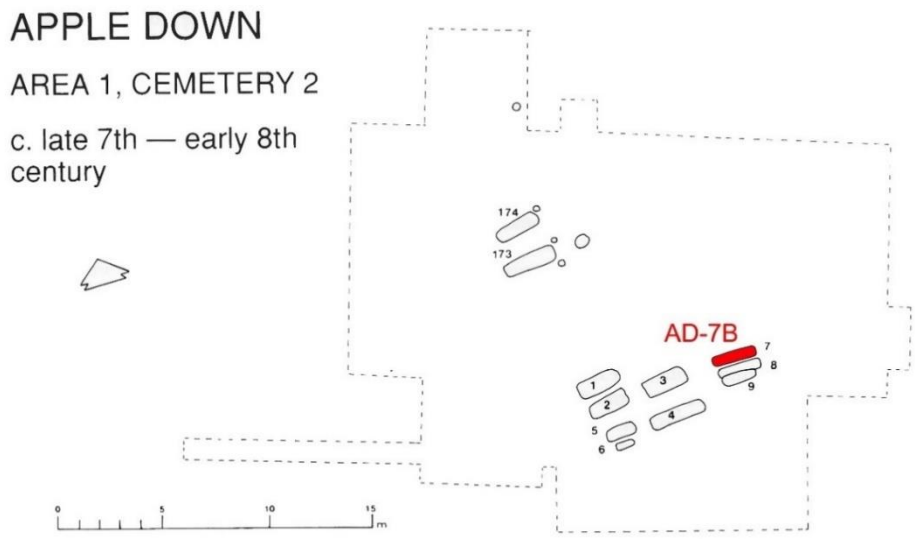

Figure 7.11- Map of Apple Down Cemetery 2 demonstrating the location of the individual with physical impairment (in red). Source: Down and Welch (1990:13), and modified by current author. © Chichester District Council. All rights reserved.

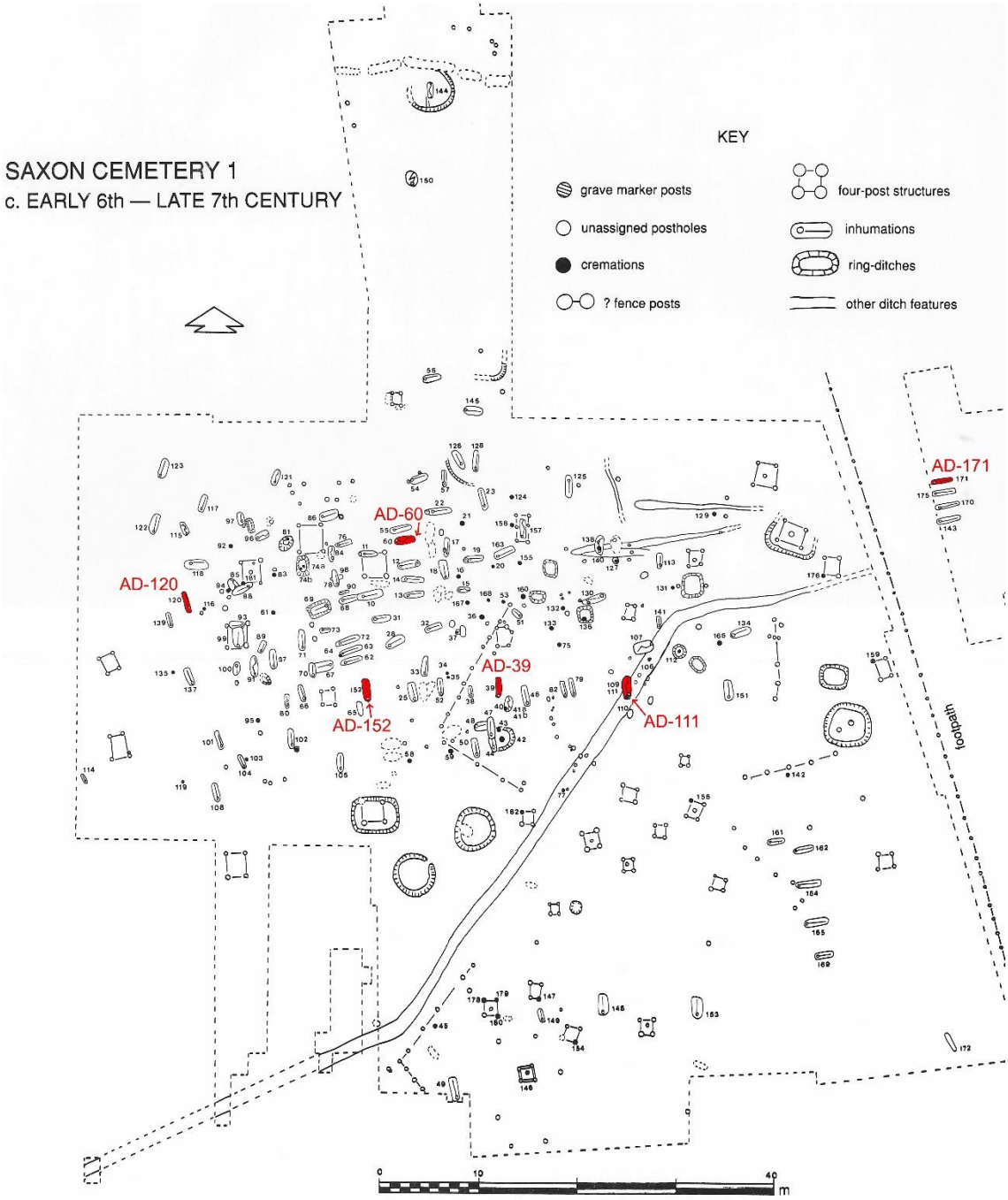

Figure 7.12- Map of Apple Down Cemetery 1 demonstrating the location of the individuals with physical impairment (in red). Source: Down and Welch (1990), and modified by current author.

Table 7.3- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Apple Down.

Variable	N	Type	n	% of pop	AD-7B	AD-39	AD-60	AD-111	AD-120	AD-152	AD-171
Grave orientation	119	S-N	52	43.7	W-E	S-N	W-E	S-N	S-N	S-N	W-E
		W-E	51	42.9							
		SW-NE	**6**	**5.0**							
		E-W	**5**	**4.2**							
		N-S	**4**	**3.4**							
		SE-NW	**1**	**0.8**							
Body orientation	116	Supine	94	81.0	Supine	Supine	L side	R side*	R side*	Supine	R side*
		R side	12	10.3							
		L side	**9**	**7.8**							
		Prone	**1**	**0.9**							
Body position	113	Extended	86	76.1	Extended	Extended	Flexed	Flexed	Flexed	Extended	Flexed
		Flexed	19	16.8							
		Crouched	**8**	**7.1**							
Head position	100	R facing	33	33.0	L facing	Upright facing	L facing	R facing	R facing	Forward facing	N/A
		Forward facing	26	26.0							
		L facing	24	24.0							
		Upright facing	17	17.0							
Arm position	93	Extended	38	40.9	Extended	Extended	Both bent	R straight, L bent	Both bent	R straight, L bent	Extended
		Both bent	25	26.9							
		R straight, L bent	21	22.6							
		R bent, L straight	**9**	**9.7**							
Leg position	111	Extended	77	69.4	Extended	Extended	Bent L*	Bent R	Bent R	Extended	Bent R
		Bent R	17	15.3							
		Bent L*	12	10.8							
		R bent, L straight	**3**	**2.7**							
		Both bent outward	**2**	**1.8**							

Variable (cont'd)	N	Type	n	% of pop	AD-7B	AD-39	AD-60	AD-111	AD-120	AD-152	AD-171
Coffin	125	Absent	98	78.4	Possible	Absent	Present	Absent	Absent	Absent	Absent
		Possible/ present	27	21.6							
Timber structure	125	Absent	123	98.4	Absent	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**2**	**1.6**							
Marker post	125	Absent	118	94.4	Absent	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**7**	**5.6**							
Stone inclusion	125	Absent	109	87.2	Absent	Absent	Lining	Absent	Absent	Absent	Absent
		Lining	15	12.0							
		Other	**1**	**0.8**							
Weathering	125	Absent	120	96.0	Absent	Absent	Absent	Absent	Present	Absent	Present
		Present	**5**	**4.0**							
Mound	125	Absent	122	97.6	Absent	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**3**	**2.4**							
Charcoal inclusion	125	Absent	124	99.2	Absent	Absent	Absent	Absent	Present	Absent	Absent
		Present	**1**	**0.8**							
Multiple burial	125	Single	111	88.8	Single	Single	Single	Single	Single	Single	Single
		Vertical consecutive	**12**	**9.6**							
		Vertical contemporary	**2**	**1.6**							
Grave goods	125	Other	51	40.8	None	None	None	Other[1]	None	Weapon[2]	None
		None	43	34.4							
		Weapons	17	13.6							
		Jewellery	14	11.2							

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population; *=percentage close to 10% threshold and probably considered non-normative. Grave goods: [1]=pottery rim (3.2%); [2]= buckle (28.0%), knife (40.8%), spear (12.8%), shield (2.4%); percentage indicates the % of graves in which these items were found.

7.2.4 Interpretations

The grave drawings of the individuals with physical impairment are provided in Figure 7.13.

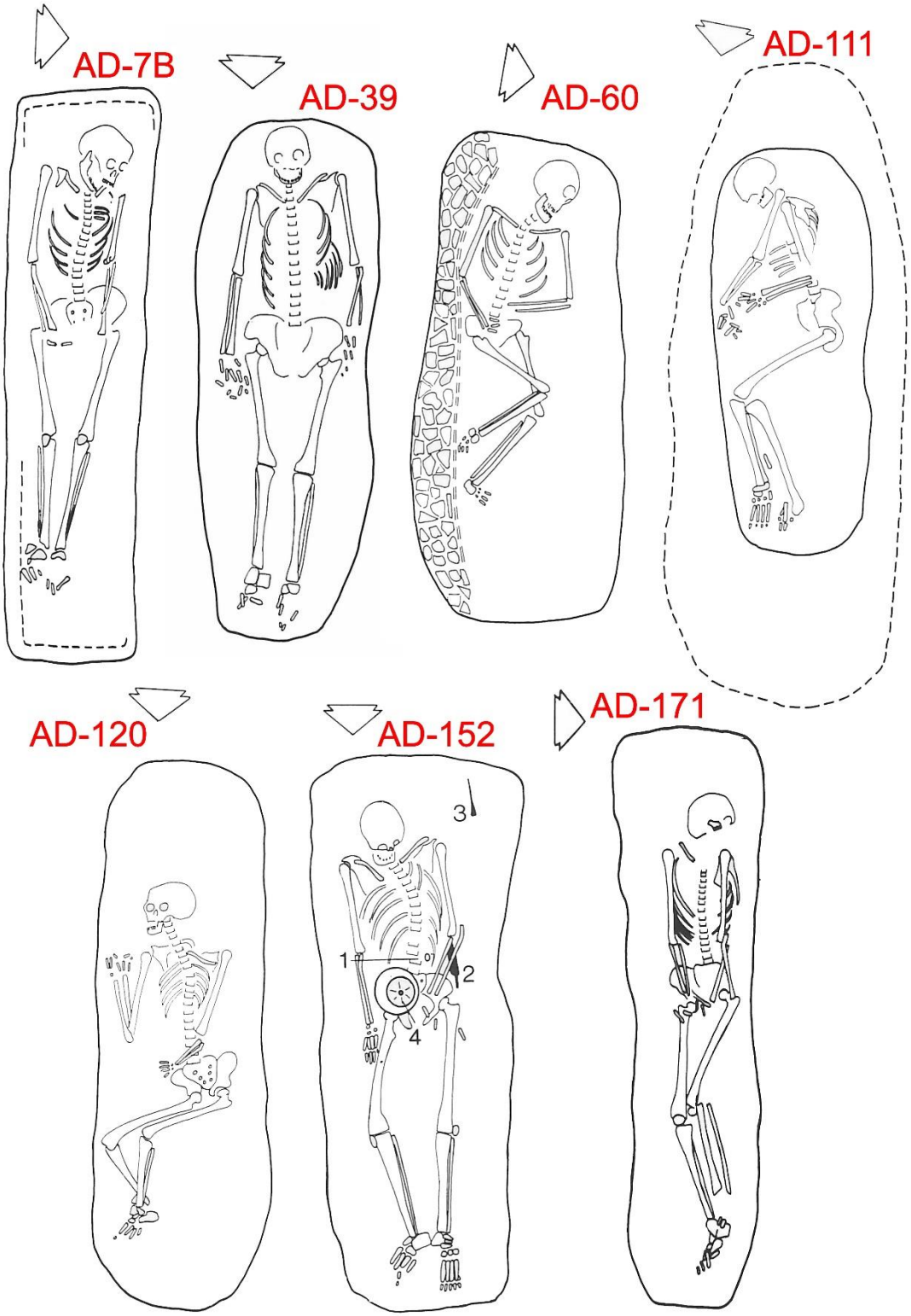

Figure 7.13- Grave drawings for the individuals with physical impairment at Apple Down. Source: Down and Welch (1990), and modified by current author. © Chichester District Council. All rights reserved.

7.2.4.1 Apple Down 7B and Apple Down 39

AD-7B (middle adult female) had tuberculosis (that did not cause kyphosis), which probably resulted in fever, malaise, and weight loss (Hopewell 1994), or vertebral osteomyelitis which may have caused tenderness, pain, and swelling (Lehovsky 1999; Resnick 2002f; Zimmerli 2010). Both of these conditions could have limited normal movement or social participation. AD-39 (young adult male) had a mis-aligned femoral fracture that probably resulted in an abnormal gait, which may have restricted normal social and/or economic participation. Both AD-7B and AD-39 were generally unremarkable in terms of funerary treatment and were buried without grave goods (Figure 7.13). The remaining individuals with physical impairment are discussed in more depth below.

7.2.4.2 Apple Down 60

AD-60 (unsexed adolescent) was arguably the most visually distinctive and functionally restricted individual at Apple Down as they probably experienced paraplegia or quadriplegia (paralysis of the limbs), which would have severely restricted normal participation in social and economic activities. Because it was unlikely that AD-60 could walk independently, it is probable that they required care from other individuals in order to survive (see Section 10.2.2.9). The inability to use one's legs does not mean that all activities are impossible, but AD-60's carer/s probably would have had to help provide food, water, and shelter, and to help maintain AD-60's personal hygiene and temperature.

AD-60 was buried on their left side, which occurred in only eight other burials (7.8%), and was probably buried in a coffin as evidenced by the stone packing on the right side of the body (Figure 7.13). Although the use of coffins was not widespread at Apple Down, it was also not particularly infrequent (21.6%). However, the regular and tight stone packing observed in the grave of AD-60 would certainly have required increased effort on the part of those performing the burial: they would have had to dig a grave large enough to accommodate both the body inside of a coffin and the stone packing, acquire the correct size stones, lower the body and coffin into the grave, then pack the stones neatly up against the side of the coffin. Thus, while the burial treatment received

by AD-60 was not non-normative at Apple Down, it did require increased effort and resources.

Stone packing was observed in the graves of males, females, and non-adults, suggesting that this treatment was not reserved for a specific age or sex group. The stone lining was not placed on top of AD-60's body, as in the case of AD-173 (middle adult male with no visible skeletal impairment who had a large flint placed over the torso region), a mortuary rite which may have resulted from a fear of the dead or a desire to confine the deceased to the ground (Reynolds 2009: 92-3). In some cases at Apple Down, stone packing was used to line all four sides of the body, as in AD-4B (older adult female) and AD-175 (middle adult female), and both long sides of the body, as in AD-69 (older child) and two older adult females (AD-169 and AD-170B), all of whom did not have evidence of skeletal impairment. Because more elaborate stone packing was used with older adult females and a non-adult, all of who might have been considered socially or physically vulnerable due to their age and/or their sex, it is reasonable to suggest that stone packing around a body may have had protective symbolism at Apple Down, and was meant to keep the deceased safe in the afterlife. It is therefore noteworthy that an individual who probably needed care in life due to the paralysis of the lower half of the body was buried in a coffin with stone packing. This suggests that those who buried AD-60 cared for and respected this individual, and wanted to keep them safe even after death, despite the fact that they may have incurred a familial or communal cost, and would have been both visually distinctive and functionally restricted in life.

7.2.4.3 Apple Down 111

AD-111 (older adult individual who was probably female) probably had restricted movement of the right hip and limited locomotion due to severe osteophytosis (Doherty et al. 2005). AD-111 was buried on her right side (10.3%) with a fragment of pottery rim (Figure 7.13). She was buried slightly away from the main concentration of graves on the south-eastern margin of the cemetery, but was not in isolation. There were two inhumation burials farther east along with several ring ditches, and several four post structures to the south of AD-111. It appears that AD-111 was on the margins of the main concentration of inhumation

burials, but that the cemetery (incorporating four post structures and ring ditches) spread beyond this to the south and east.

7.2.4.4 Apple Down 120

AD-120 (middle adult female) had a temporal cyst (probably not visible to others) that might have impinged on cranial nerves causing hearing loss, headaches, facial tics, and vertigo (Graham et al. 1985; Goldofsky et al. 1991). AD-120 was buried near the western margin of the cemetery, but was surrounded by other burials. She was buried on her right side (10.3%) in a flexed position (16.8%) (Figure 7.13). There was a concentration of charcoal above her head in the empty space of the grave, a rite which was not observed in any other graves at Apple Down. The excavators do not discuss this charcoal further, but it is possible that an organic object that left no solid remains was placed above the head of AD-120 when she was buried. Without further information, interpretations about this charcoal deposit are hindered, but it is interesting that a burial rite that appears to be unique at Apple Down was afforded to an individual who was possibly physically impaired. Finally, there was considerable weathering to the sides of the grave, suggesting a delay between the digging of the grave and the burial of AD-120 (Down and Welch 1990: 49), but without more specific information, any interpretation of this is tentative.

7.2.4.5 Apple Down 152

AD-152 (young adult male) had HOA or treponemal disease and was buried with a spear (12.8%) and shield (2.4%) (Figure 7.13). Although the diagnosis of AD-152's condition was not definite, it is likely that he experienced bone pain and soft tissue or joint swelling (Resnick 2002g; Nahar et al. 2007) for a number of years, which probably restricted movement and might have limited participation in social or economic activities.

The significance of weapons burials in EAS England, also sometimes referred to as "warrior burials", is controversial (Section 3.2.6.3.1). The traditional assumption that an individual buried with weaponry was, in fact, a warrior has been critiqued in recent research (Härke 1990; Lucy 1997; Brunning 2013; Sayer et al. 2019). The general consensus from this research is that, while weaponry in

burial may reflect actual warrior status in life, this is unlikely to have always been the case. Instead, the inclusion of weaponry in burials may be indicative of the social or economic status of the individual or their family, may reflect their Germanic ancestral origin (Härke 1990), or may have more archaeologically-obscure symbolic connotations that were utilised to manipulate the identity reflected in death (Brunning 2013; Sayer et al. 2019).

It is therefore possible that AD-152 was a warrior, although based on the osteological and associated clinical data, it seems likely that his symptoms would have prevented strenuous activity for several years before his death. Because he was a young adult when he died, AD-152 would therefore not have had many years to "participate" as a warrior (if indeed he was one at all). Thus, instead of reflecting an actual warrior status, the spear and shield may have been included in AD-152's grave to reflect the social, political, or military importance of his family. It is possible that those burying him were constructing a symbolic mortuary identity that AD-152 or his family had desired for him in life, or that they were trying to compensate for AD-152's physical impairment by overemphasising his association with weaponry (Brunning 2013).

While the motivations for the inclusion of weaponry in the grave of AD-152 can only be speculated about, it is significant that an individual with physical impairment *was* afforded such funerary treatment. Although AD-152 may not have been able to participate fully in social or economic activities due to pain and restricted movement, it was not considered inappropriate to afford him mortuary treatment that probably had symbolically imbued social, political, or personal motivations. This emphasis on AD-152's real or desired status suggests that those burying him had a level of care or respect for this individual, as they made an effort to control how he was perceived in death by the surrounding community.

7.2.4.6 Apple Down 171

AD-171 (unsexed middle adult) had a non-specific inflammation of the left lower leg that probably caused swelling, pain, and potentially restricted movement (Golding 1985; Amft et al. 2008). AD-171 was buried on the right side (10.3%) in a very slightly flexed position (16.8%) (Figure 7.13). They were buried without grave goods on the eastern limit of the cemetery. Although buried in a

marginal location, AD-171's inclusion in a neat row with three other graves is more suggestive of social inclusion than exclusion. As with AD-120, there was also evidence of weathering on the sides of the grave suggesting a delay between the digging of the grave and the burial of AD-171 (Down and Welch 1990: 49).

7.2.4.7 Body orientation and position

AD-111, AD-120, and AD-171 were all buried on their right sides in flexed positions (but AD-171 was noticeably less flexed than the others). Although right side burial (10.3%) did not meet this research's threshold percentage for non-normativity, it is noteworthy that so many of the individuals with physical impairment were buried in this orientation. This suggests that, although a threshold must be chosen to allow for analysis of what is and is not non-normative, the subjectivity of this threshold value should be kept in mind. Patterns of funerary treatment identified within the sample of individuals with physical impairment (at each of the analysed sites) should therefore be considered in a site-wide context regardless of whether a specific rite was considered non-normative.

Of the individuals with physical impairment at Apple Down, 42.9% and 57.1% were buried on their right sides in flexed positions respectively, while only 7.6% and 14.2% of the individuals without physical impairment were buried on their right sides in flexed positions respectively (Table 7.4). Interestingly, a similar pattern was noted between non-adult and adult individuals and male and female adults: non-adults and females were more frequently buried on their right sides in flexed positions than adults and males respectively (Table 7.4).

These data demonstrate that burial on the right side in a flexed position was more common among non-adults, females, and individuals with physical impairment than adult males without physical impairment. A similar pattern was noted by Mui (2018), although she did not consider individuals with physical impairment. Mui (2018) proposed that non-extended, non-supine burial was reserved for individuals in Anglo-Saxon society who may have occupied positions of less power, because there was less need for a standardised burial that would be symbolically understood by more people (Section 10.3.3). This might suggest that physical impairment at Apple Down was associated with diminished power,

perhaps because it made an individual less able to contribute socially or economically, or because looking or moving differently had negative connotations. However, it is similarly possible that AD-60 (non-adult), AD-120 (female), and AD-171 (unsexed adult) were buried on their right sides in flexed positions because of their age or gender identities, rather than because of their physical impairments. This is supported by the fact that the only male individual with physical impairment (AD-152) was buried in a supine, extended position with weaponry. Mui (2018) found that males, particularly those buried with weaponry, were significantly more likely to be buried in the supine, extended position, and therefore AD-152's conformity to this potentially inter-regionally understandable burial treatment indicates that physical impairment did not always influence burial treatment.

7.2.4.8 Grave goods

Although burial without grave goods at Apple Down was not non-normative (34.4%), it is interesting that the percentage of individuals with physical impairment buried without grave goods is considerably higher than the percentage of individuals without physical impairment buried without grave goods (Table 7.4). A similar pattern is noted between non-adults and adults. The notable lack of grave goods amongst the individuals with physical impairment at Apple Down might suggest that these individuals could not afford to be buried with grave goods, potentially because their physical impairment prevented them from normal economic participation. However, the direct correlation between grave goods and wealth or social status has been challenged in the past (Arnold 1997: 175-6), and it is important to consider the other factors that might influence provision of burial goods (e.g. sex, age, social/religious/political status, ritualistic symbolism, motivations of the mourners or community, personality) (Section 3.2.6.1).

Table 7.4- Comparison of body orientation/position and grave good inclusion between 1) individuals with and without physical impairment, 2) adults and non-adults, and 3) males and females at Apple Down.

	Body orientation		
	N (total)	N (R side)	% (R side)
Physically impaired	7	3	42.9
Not physically impaired	109	9	8.3
Non-adult	32	5	15.6
Adult	84	7	8.3
Female	44	4	9.1
Male	41	2	5.4
	Body position		
	N (total)	N (flexed)	% (flexed)
Physically impaired	7	4	57.1
Not physically impaired	106	15	14.2
Non-adult	30	9	30.0
Adult	83	10	12.0
Female	44	6	13.6
Male	41	3	8.3
	Grave good inclusion		
	N (total)	N (absent)	% (absent)
Physically impaired	7	5	71.4
Not physically impaired	118	38	32.2
Non-adult	36	16	44.4
Adult	89	27	30.3
Female	44	11	25.0
Male	41	13	31.7

7.2.4.9 Summary

There was no uniform treatment of the individuals with physical impairment in death at Apple Down: burial location, body positioning, and grave inclusions varied widely. Two interesting patterns emerged: individuals with physical impairment (along with non-adults and females) were more likely to be buried on their right sides in flexed positions, and (along with non-adults) were more likely to be buried without grave goods. Although these patterns might be used to suggest that individuals with physical impairment had less power and/or lower economic and social statuses, the small sample size must be considered, and a more nuanced interpretation is necessary. Considering that AD-60 (paraplegia or quadriplegia), who was probably the most visually distinctive and functionally restricted individual at Apple Down, was buried with stone packing indicative of effort and possibly symbolic of protection, and because AD-152 (treponemal disease or HOA) was buried with a spear and shield, it is clear that at Apple

Down, physical impairment did not necessarily exclude an individual from a special, symbolically relevant burial. Therefore, while it is possible that burial on the right side is suggestive of diminished authority, and the lack of grave goods observed amongst the individuals with physical impairment is indicative of lower economic status, it is more likely that the variation observed in the mortuary treatment of the individuals with physical impairment was influenced by social and personal factors unrelated to their physical impairment, or that this funerary treatment did not have negative connotations.

Therefore, inferring from the amount of variability in the mortuary treatment of individuals with physical impairment, it appears that attitudes towards these individuals and opinions about the concept of physical impairment or disability varied within the Apple Down community. It was considered appropriate to bury individuals with physical impairment without grave goods, but it was also fitting to bury them with items or inclusions that were potentially symbolic of post-mortem protection or that emphasised a real or manipulated self or social identity

7.3 Butler's Field

7.3.1 General funerary treatment

The funerary treatment variables which were recorded for the Butler's Field cemetery (5th to early 8th centuries) based on information provided by Boyle et al. (1998; 2011) include grave dimensions, shape, orientation, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, marker posts, ring ditches, other individuals (multiple burial), and grave goods. The cemetery consists of two phases described by Boyle et al. (1998; 2011) as Migration and "Final Phase" (Section 5.3.2).

7.3.1.1 Grave orientation and shape

A majority of the graves were oriented S-N or within 45º of this (Figure 7.14), but the N-S (15.2%) and W-E (15.6%) orientations were also relatively common. When considering the burial phases separately, it becomes clear that in the Migration cemetery, SW-NE was the most frequent orientation (Figure

7.15), while in the “Final Phase” cemetery, NW-SE was the most frequent orientation (Figure 7.16).

Ten different grave shape groups were recorded, however they were not well-defined by Boyle et al. (1998). Irregular sub-apsidal and irregular sub-rectangular were the most frequent grave shapes.

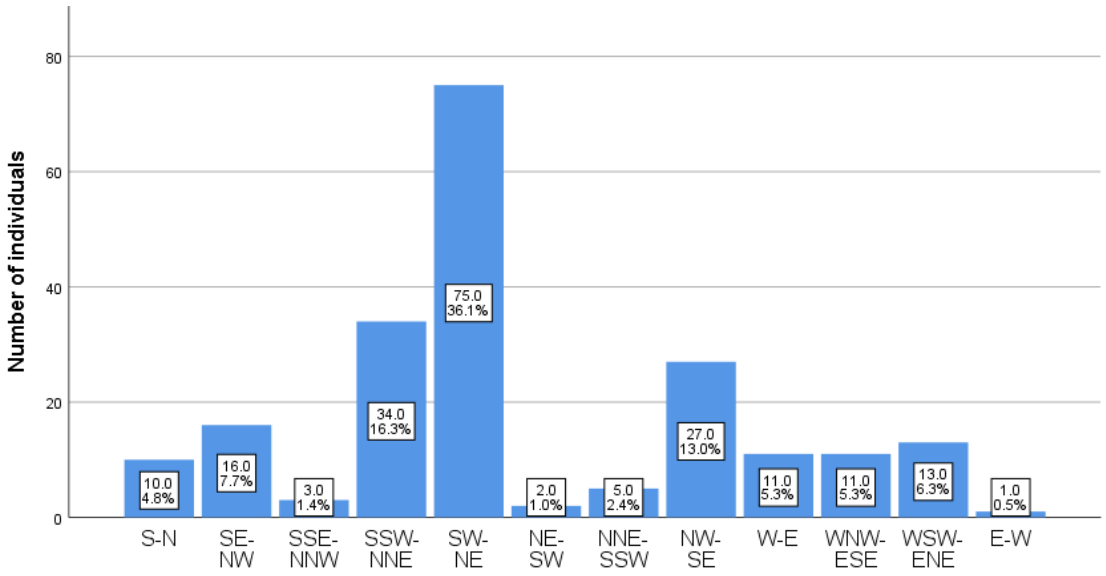

Figure 7.14- Grave orientation distribution for the entire Butler’s Field burial population including unphased burials.

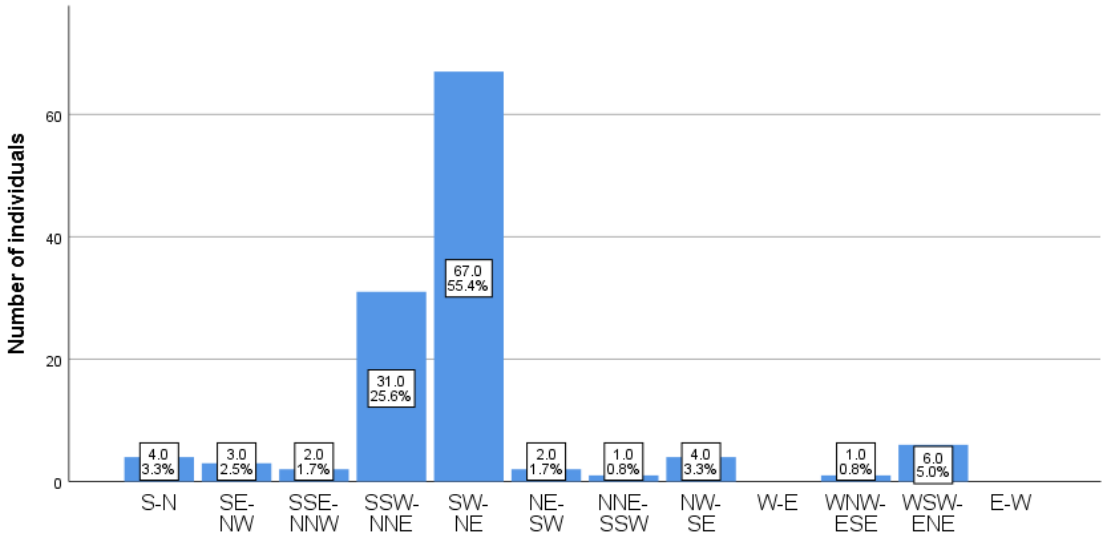

Figure 7.15- Grave orientation distribution for the Migration burial population at Butler’s Field.

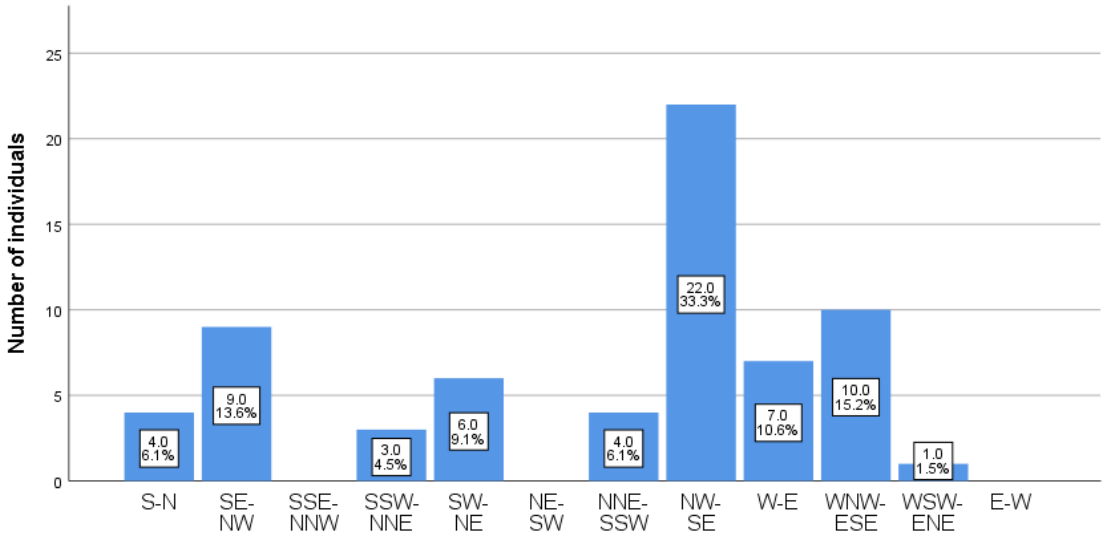

Figure 7.16- Grave orientation distribution for the "Final Phase" burial population at Butler's Field.

7.3.1.2 Body and limb positioning

A majority of the individuals were buried extended (62.7%) and supine (78.2%). Flexed burial (many times supine but flexed) was relatively common in this population (32.4%), while burial on the left side (8.3%) and in the crouched position (4.3%) is considered non-normative. A majority of individuals were buried with their legs extended (52.4%), but legs bent to the left (17.6%) or the right (21.4%) were not infrequent. It was more common for non-adults than adults to be buried on the right/left sides, in the flexed or crouched positions, with the legs bent right/left, with the skull facing left, and with both arms bent (Appendix 2: Section 2).

7.3.1.3 Structures and furniture

Only two graves produced wood trace evidence which could be considered evidence of coffin use (0.9%). One of these graves contained an individual (BF-18, middle adult female) who was accompanied by the richest grave goods in the entire cemetery, and also had evidence of stone lining. One individual (BF-180, older adult male) was buried in a grave that had two ledges at the sides, which may have supported a lid, and two individuals were buried with evidence of a woven mat (0.9%). Two individuals were buried in graves with evidence of possible grave markers (0.9%). One individual (BF-187, middle adult female), who was also buried with a silver cross pendant, was buried within a ring ditch.

Stones were included in 13 graves (5.8%) and were associated with 18 individuals (8.1%), as some of these graves contained multiple individuals. Two graves were completely covered with stones, five were partially covered with stones, and four contained stones that appeared to be part of a stone lining. One grave included a stone behind the skull of the individual, and another contained a large fragment of limestone which covered the feet of the individual.

7.3.1.4 Multiple burial

Twelve graves were classified as contemporary multiple burials and contained 29 individuals (13.0% of burial population) (Boyle 2011). Two graves included three individuals (with at least one individual inserted at a slightly later date), and one limestone-lined grave included five individuals, four of which were inserted at around the same time on top of the original inhabitant. Boyle (2011: 157) argues that these examples can be considered evidence of family burial plots. The remainder of the contemporary multiple graves contained two people, five of which contained an adult and a non-adult.

There were three instances of consecutive burial involving eight individuals (3.6% of burial population). In one grave, a secondary individual was buried on top of the primary inhabitant without disturbance of the previous remains, while in the other two graves, the primary inhabitant had been removed and disarticulated for insertion of the secondary individual.

7.3.1.5 Grave goods

Table 7.5 provides a summary of the grave good types and frequencies at Butler's Field. It should be noted that there were some disturbed burials which were not associated with any small finds at the time of excavation, but may have had grave goods at the time of burial. Therefore, it is possible that the percentage of individuals buried without grave goods is slightly increased.

Table 7.5- Grave good types and frequencies for the Butler's Field cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	70	31.7
Weaponry			
Spear	28	25	11.3
Shield	11	11	5.0
Ferrule	6	5	2.3
Seax	4	4	1.8
Baldric	2	2	0.9
Scabbard	1	1	0.5
Dress accessories			
Beads	2,129	65	29.4
Brooch	84	47	21.3
Pin	51	46	20.8
Buckle	44	40	18.1
Pendant	21	14	6.3
Miscellaneous rings	21	10	4.5
Finger ring	11	9	4.1
Neck ring	2	2	0.9
Bird plaque	1	1	0.5
Tools and personal equipment			
Knife	76	73	33.0
Keys	32	15	6.8
Toilet set	8	8	3.6
Spindle whorl	11	7	3.1
Chatelaine	4	4	1.8
Comb	4	4	1.8
Tweezers	3	3	1.4
Brush tube	3	3	1.4
Scraper	4	2	0.9
Weaving pick	2	2	0.9
Shears	1	1	0.5
Antler disc	1	1	0.5
Whetstone	1	1	0.5
Spokeshave	1	1	0.5
Spatulate tool	1	1	0.5
Wool comb	2	1	0.5
Weaving batten	1	1	0.5
Chisel	1	1	0.5
Awl	1	1	0.5
Vessels and containers			
Bag/purse	11	11	5.0
Bucket	7	7	3.2
Wooden bowl	5	5	2.3
Copper bowl	3	3	1.4
Wooden box	3	3	1.4
Potsherd	-	3	1.4
Casket/workbox	1	1	0.5
Pursemount	1	1	0.5

Grave good (cont'd)	# in cemetery	# of graves	% of all graves
Other			
Coins	19	10	4.5
Cowrie shells	8	5	2.3
Flint	5	5	2.3
Pierced animal teeth*	4	4	1.8
Shells	4	4	1.8
Fossils	3	3	1.4
Worked stone	2	2	0.9
Bells	2	2	0.9
Garnets	195	1	0.5
Terret	1	1	0.5
Balance pan	1	1	0.5
Crow skeleton	1	1	0.5

NB: *= two beaver, one canine, one boar

7.3.2 Palaeopathological analysis

Four individuals were identified as potentially physically impaired (1.8% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.6. Refer to Appendix 3: Section 3.2 for detailed differential diagnoses for each individual.

Table 7.6- Summary of the palaeopathological analysis of the individuals with physical impairment from Butler's Field.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
BF-6	MA	F	- Bilateral pseudarthroses on posterior surfaces of both scapulae - Smaller than average humeral heads	- BPP - Congenital dysplasia of scapular neck - **Posterior subspinous glenohumeral joint dislocation**	- Pain + swelling - Limitation of shoulder movement - Abnormal upper body posture - May have been caused by epileptic seizure	Convincing; acquired (med-long)	Figure 7.17
BF-65	OA	M	- Well-healed trauma to R frontal + R zygomatic→ posterior/medial displacement of frontal process of zygomatic - Antero-posterior shortening of R side of face with asymmetrical eye orbits	- **Traumatic injury**	- Possible neurosensory disturbance→ lock jaw + double vision - Possible blindness from damage to orbit/eyeball - Possible brain damage from trauma to cranium - Facial asymmetry + probable noticeable scar	Possible; acquired (med-long)	Figure 7.18
BF-75	MA	M	- Fusion + kyphosis of T11-L2 - Smoothed out lytic lesions on T6-T10 - Large, smoothed out cavity between L1 + L2	- Osteomyelitis - Brucellosis - Sarcoidosis - Metastatic carcinoma - **Tuberculosis**	- Gibbus deformity - Back pain - Disruption of spinal cord→ paraparesis/paraplegia, urinary/anal incontinence, pain, sensory impairment, + abnormal gait - General symptoms: weakness, fatigue, weight loss, fever, etc.	Convincing; acquired (med-long)	Figure 7.19-Figure 7.20

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
BF-134	ADO	US	- Distal + posterior displacement of L proximal humeral epiphysis - Shortening of L humerus - Angulation of L radial head→ lateral angulation of L forearm - Loss of convexity of R humeral head - Deformation of R radial head with swelling of proximal shaft - Lateral angulation of R forearm	- **Traumatic injury to R and L upper limbs**	- Lateral angulation of forearms probably not noticeable - Shortening of R humerus→ probably visually distinctive - Restricted use of R upper limb + possible restricted use of L upper limb	Convincing; acquired (med-long)	Figure 7.21-Figure 7.22

NB: differential diagnoses in **bold** are considered the most likely.

Figure 7.17- Pseudarthroses on the posterior surfaces of the right and left scapulae of BF-6. Produced with kind permission of the Corinium Museum.

Figure 7.18- Antero-posterior shortening of the right side of the viscerocranium of BF-65 with asymmetrical eye orbits. Produced with kind permission of the Corinium Museum.

Figure 7.19- Fusion and kyphosis of T11-L2 of BF-75 with approximately 90º angulation. Produced with kind permission of the Corinium Museum.

Figure 7.20- Smoothed out lytic lesions with rounded edges on the right side of T7 of BF-75. Produced with kind permission of the Corinium Museum.

Figure 7.21- Asymmetry in the lengths of the left and right humeri of BF-134. Produced with kind permission of the Corinium Museum.

Figure 7.22- Swelling of the proximal diaphysis of the right radius of BF-134. Produced with kind permission of the Corinium Museum.

7.3.3 Funerary treatment of the individuals with physical impairment

The average grave dimensions for the adult and non-adult burial populations as well as the dimensions of the graves of the individuals with physical impairment are provided in Table 7.7 and Table 7.8.

Table 7.7- Grave dimensions for the adult burial population and for the adult individuals with physical impairment at Butler's Field.

	Length (m)	Width (m)
Site average	1.81	0.78
Standard deviation	0.32	0.17
BF-6	2.05	<u>0.59</u>
BF-65	1.80	0.85
BF-75	1.45	0.75

NB: Underlined values are more than one standard deviation from site average.

Table 7.8- Grave dimensions for the non-adult burial population and for the non-adult individual with physical impairment at Butler's Field.

	Length (m)	Width (m)
Site average	1.44	0.73
Standard deviation	0.42	0.20
BF-134	1.73	0.73

The south, south-western, east, and south-eastern margins of the cemetery were well-defined, however burials most certainly continued to the north and west. Although the cemetery was not fully excavated, it is possible to determine that there was no clustering of the individuals with physical impairment (Figure 7.23). To determine if any of the individuals with physical impairment were buried in marginal locations, it was necessary to consider them in their appropriate phases (Migration or "Final Phase") (Section 5.3.2). Although buried in an unphased grave, BF-6 was buried in a location that was isolated from both the Migration and "Final Phase" cemeteries. BF-65 (Migration) was buried in the central part of the Migration cemetery, close to the focal ring burial. BF-134 (Migration) was buried near the eastern margin of the Migration cemetery, and BF-75 ("Final Phase") was buried near the south-western margin of the "Final Phase" cemetery.

Table 7.9 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

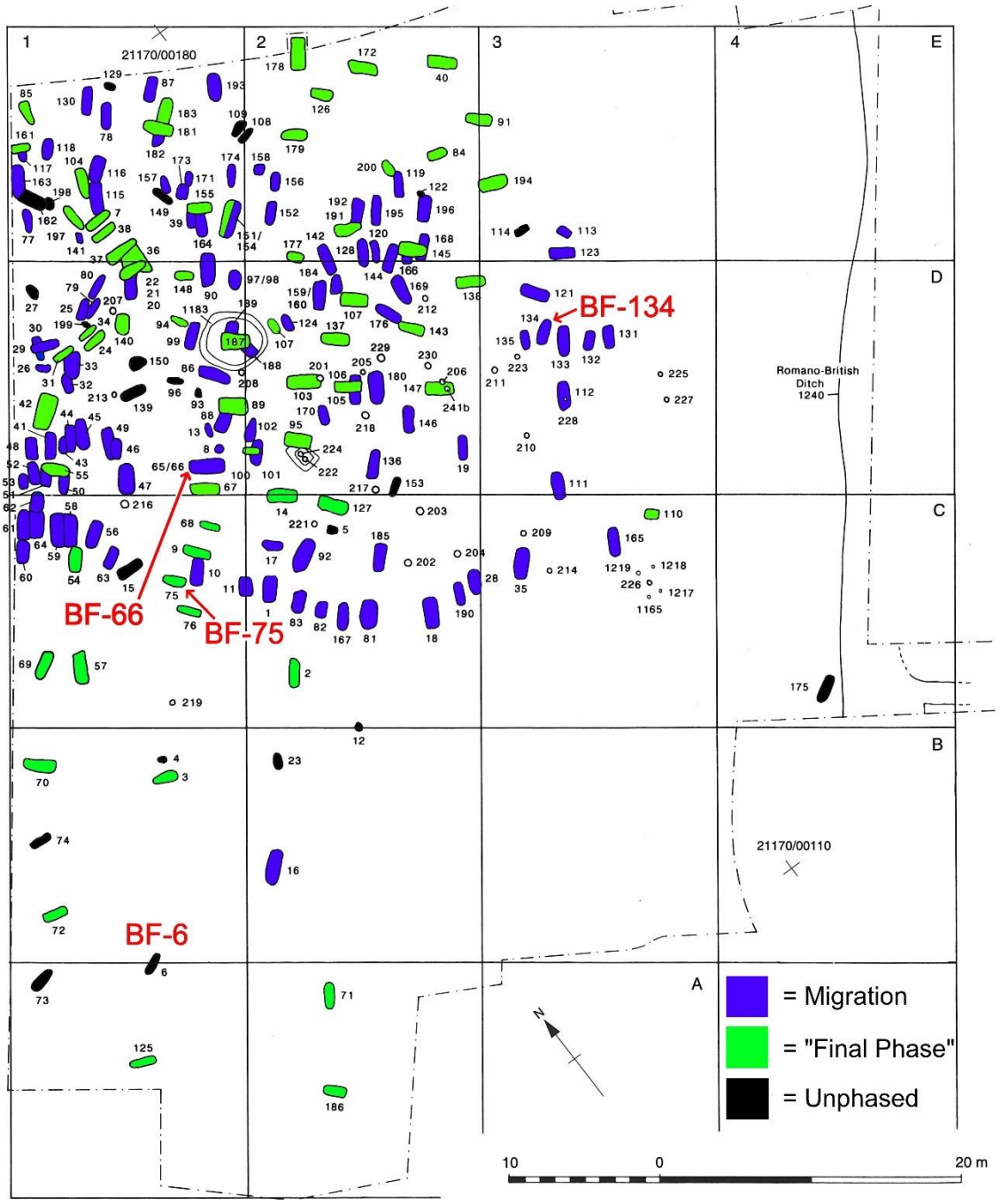

Figure 7.23- Map of the Butler's Field cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Boyle et al. (2011:7), and modified by current author. © Oxford Archaeology.

Table 7.9- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Butler's Field.

Variable	N	Type	n	% of pop	BF-6 (Unphased)	BF-65 (Migration)	BF-75 (Final Phase)	BF-134 (Migration)
Grave orientation	208	SW-NE	75	36.1	WSW-ENE[1]	NW-SE[2]	SE-NW	SW-NE
		SSW-NNE	34	16.3				
		NW-SE	27	13.0				
		SE-NW	**16**	**7.7**				
		WSW-ENE	**13**	**6.3**				
		W-E	**11**	**5.3**				
		WNW-ESE	**11**	**5.3**				
		S-N	**10**	**4.8**				
		NNE-SSW	**5**	**2.4**				
		SSE-NNW	**3**	**1.4**				
		NE-SW	**2**	**1.0**				
		E-W	**1**	**0.5**				
Grave shape	197	Irregular sub-rectangular	59	29.9	Irregular sub-apsidal	Irregular sub-rectangular	Irregular shaped	Regular sub-apsidal
		Irregular sub-apsidal	57	28.9				
		Irregular shaped	23	11.7				
		Regular sub-apsidal	22	11.2				
		Irregular ovoid	**10**	**5.1**				
		Large irregular sub-rectangular	**9**	**4.6**				
		Regular sub-rectangular	**7**	**3.6**				
		Large irregular sub-apsidal	**4**	**2.0**				
		Regular ovoid	**4**	**2.0**				
		Narrow irregular shaped	**2**	**1.0**				

Variable (cont'd)	N	Type	n	% of pop	BF-6 (Unphased)	BF-65 (Migration)	BF-75 (Final Phase)	BF-134 (Migration)
Body orientation	193	Supine	151	78.2	Supine	Supine	Supine	Supine
		R side	22	11.4				
		L side	**16**	**8.3**				
		Prone	**3**	**1.6**				
		Other	**1**	**0.5**				
Body position	185	Extended	116	62.7	Extended	Flexed	N/A	Extended
		Flexed	60	32.4				
		Crouched	**8**	**4.3**				
		Other	**1**	**0.5**				
Head position	152	L facing	55	36.2	Forward facing	L facing	Other- propped against side of grave	R facing
		R facing	45	29.6				
		Forward facing	41	27.0				
		Upright facing	**7**	**4.6**				
		Other	**4**	**2.6**				
Arm position	163	Both bent	57	35.0	R bent, L straight	Both bent	Both bent	Both bent
		Extended	39	23.9				
		R bent, L straight	35	21.5				
		R straight, L bent	32	19.6				
Leg position	187	Extended	98	52.4	R bent, L straight	Bent R	N/A	Extended
		Bent R	40	21.4				
		Bent L	33	17.6				
		R straight, L bent	**7**	**3.7**				
		R bent, L straight	**7**	**3.7**				
		Both bent outwards	**2**	**1.1**				
Coffin	223	Absent	221	99.1	Absent	Absent	Absent	Absent
		Present	**2**	**0.9**				

Variable (cont'd)	N	Type	n	% of pop	BF-6 (Unphased)	BF-65 (Migration)	BF-75 (Final Phase)	BF-134 (Migration)
Ring ditch	223	Absent	222	99.5	Absent	Absent	Absent	Absent
		Present	**1**	**0.5**				
Stone inclusion	223	Absent	205	91.9	Absent	Present- stone lining	Absent	Absent
		Present	**18**	**8.1**				
Multiple burial	223	Single burial	188	84.3	Single	Multiple consecutive	Single	Single
		Multiple burial (contemporary)	29	13.0				
		Multiple burial (consecutive)	**6**	**2.7**				
Marker post	223	Absent	221	99.1	Absent	Absent	Absent	Absent
		Present	**2**	**0.9**				
Grave goods	221	Jewellery	75	33.9	None	Weapon[3]	Other[4]	Jewellery[5]
		None	70	31.7				
		Other	47	21.3				
		Weapon	29	13.1				

NB: [1]= graves oriented within 22.5° on either side (W-E and S-W burials) constituted 41.4% of burials; [2]= 3.3% in Migration cemetery; N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population. Grave goods: **[3]**=buckle (18.1%), knife (33.0%), spear (11.3%), shield (5.0%); **[4]**=knife (33.0%); **[5]**= brooch (21.3%), pin (20.8%), bronze balance pan (0.5%); percentage indicates the % of graves in which these items were found.

7.3.4 Interpretations

The grave drawings of the individuals with physical impairment are provided in Figure 7.24.

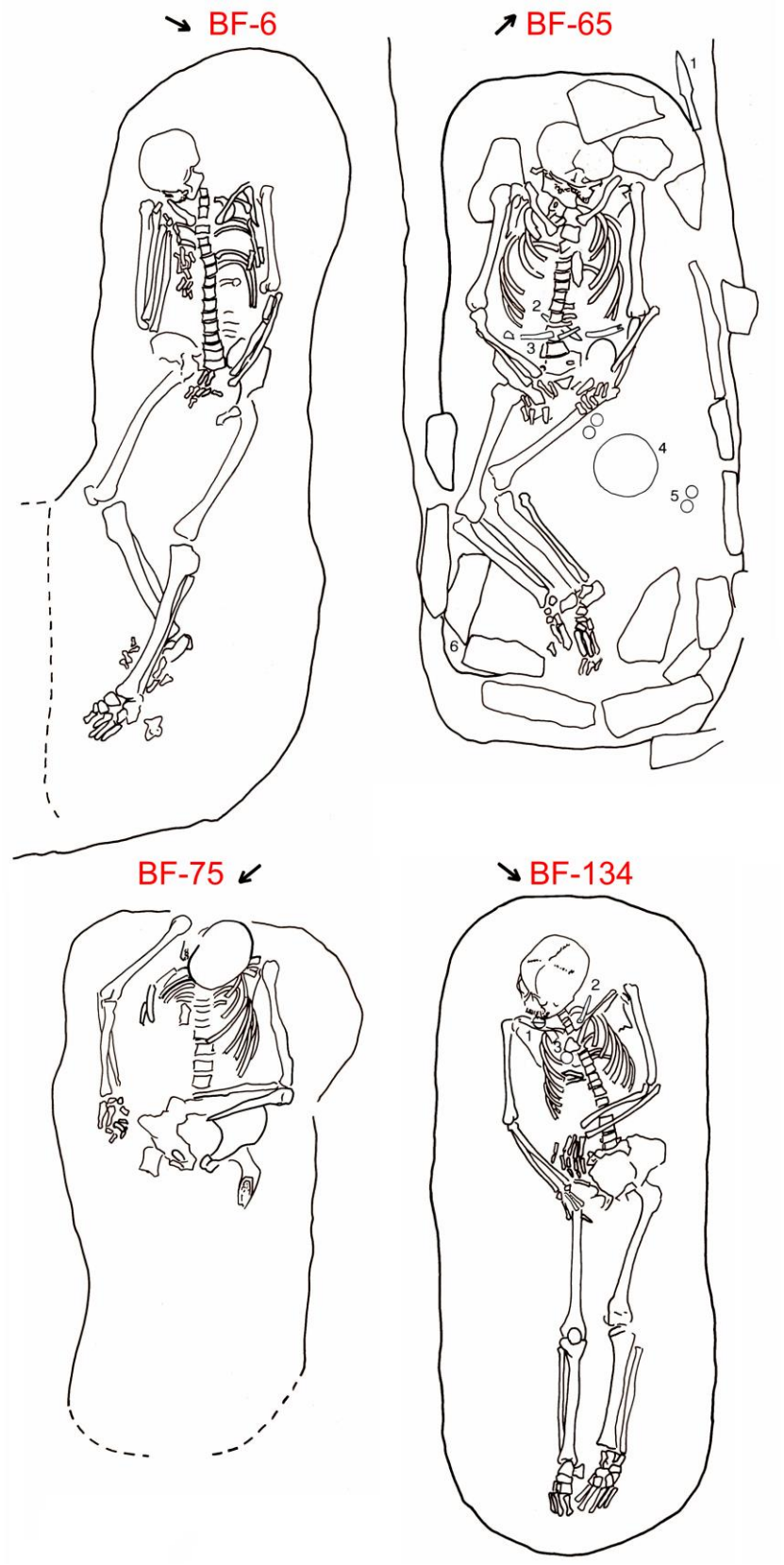

Figure 7.24- Grave drawings for the individuals with physical impairment at Butler's Field. Source: Boyle et al. (1998), and modified by current author. © Oxford Archaeology.

7.3.4.1 Butler's Field 6

BF-6 (unphased, middle adult female) had bilateral posterior shoulder dislocation and was buried in the WSW-ENE orientation (6.3% of entire burial population). Graves that were oriented within 22.5° degrees of this on either side (W-E and S-W orientations included) constituted 41.4% of burials, so it is unlikely that this orientation was meant to be non-normative. What was non-normative was the fact that this burial was located approximately 20 metres southwest of the general burial population. BF-6 was buried with the right leg bent and the left leg straight which occurred in only six other individuals (3.7%) (Figure 7.24). BF-6's grave was more than one standard deviation narrower than the site average, which might indicate that less time and effort was put into the construction of the grave.

Although there appears to be no disrespectful or hasty treatment of the body of BF-6, she was purposefully located away from the general burial population to convey a particular meaning. Of the 14 burials (seven females, three males, four non-adults) that were located in isolation (more than five metres from the main burial population), seven of these graves were buried without grave goods. The notable exception is BF-71 (middle adult female), who was buried with a bag full of 200 small garnets and a cowrie shell, along with other more common grave goods.

While it was not unusual for individuals at Butler's Field to be buried without grave goods, it is interesting that the percentage of isolated burials buried without grave goods (50.0%) is larger than the percentage of the main population who were buried without grave goods (30.6%). In addition, no weapons or jewellery burials were found in isolation (except for one burial including two beads and a cowrie shell amulet), and the isolated graves which did have grave goods included more common items such as knives, pins, and buckles. It is possible that individuals of lower economic status were more likely to be buried in isolation, which could account for the lack of grave goods observed in these burials, however, a direct correlation between economic status and grave good inclusion should not be assumed. If financial status influenced burial location, it seems more likely that individuals of a lower financial status would simply be buried on the margins of the cemetery rather than outside of it. It is therefore more likely

that other social, political, or personal factors were more influential than financial status in the decision to bury an individual in isolation.

The placement of a grave in isolation has admittedly biased negative connotations of exclusivity. Without contemporary documentation, determining motivations for this funerary treatment is extremely difficult and must be approached cautiously. A majority of the isolated burials were females or non-adults (78.6%). Because females were more likely to move to a new settlement for marriage (Sayer 2014), perhaps they and their children were not as fully integrated into a community, and may have been buried in isolation to reflect their status as outsiders. Another possibility is that socially unacceptable or deviant actions or behaviours performed by individuals or their families merited burial in isolation. This could explain why a new-born (AD-12), two younger children (AD-4 and AD-23) and an older child (AD-74), who were probably too young to have been involved in actions considered socially inappropriate, were afforded this burial rite. Or perhaps because these children died prematurely, their deaths were considered particularly disruptive, and therefore non-normative burial location was required.

BF-6's physical impairment must also be discussed as a potential factor in her isolated burial. The permanent bilateral posterior dislocation of both shoulders probably resulted in abnormal posturing of both arms (adduction and internal rotation), and some movements would have been very painful (Roberts et al. 2014: 958). While the pain may have abated with time, both shoulders were probably stiff and not fully functional. Therefore, BF-6 was probably visually distinctive and functionally restricted, conditions which may have had negative social or economic implications. While this remains a possibility, it must be noted that other individuals in this burial population with physical impairment (see below) were not buried in isolation, therefore impairment status was probably not the only factor that affected BF-6's isolated burial (if indeed it affected it at all).

7.3.4.2 Butler's Field 65

BF-65 (Migration phase, older adult male) had a traumatic facial injury resulting in asymmetry, probable scarring, and possible sensory deficits, lock jaw, and double vision (Balle et al. 1982; Kovács and Ghahremani 2001). Several

aspects of BF-65's mortuary treatment require specific mention. His grave was oriented NW-SE (3.3% of Migration burials), perpendicular to most of the other Migration phase graves, which perhaps was meant to make BF-65's grave stand out from the others.

BF-65 was part of a consecutive multiple burial: he was the original inhabitant of the grave and, at a later date, the grave was enlarged to include BF-66A (adolescent) and BF-66B (middle adult female) who were buried on top of him in a contemporary double burial. The fact that BF-65's grave was enlarged to accommodate two new individuals suggests that burial in association with BF-65 was highly desirable, perhaps because he was of importance to the Butler's Field community.

BF-65 was buried with stone inclusion (8.1%), which consisted of an elaborate stone lining around most of the body (Figure 7.24). While stones were probably not expensive due to their natural abundance, effort would have been required to find appropriately sized stones and place them carefully into position around the body of BF-65. Perhaps this mortuary treatment was intended to reflect BF-65's higher social status: stone lining would have appeared more impressive during the actual funerary ceremony, and potentially also served to protect BF-65's body in death. BF-18 (middle adult female who had no evidence of skeletal physical impairment), was buried with elaborate jewellery including over 500 beads in a stone-lined tomb that was also covered with stones, while BF-81A (young adult female who had no evidence of skeletal physical impairment) was buried with over 250 beads in a stone-lined tomb (which contained four other individuals) that was also covered with stones. Therefore, it appears that at Butler's Field, it is reasonable to assume that the individuals in stone-lined tombs were probably of social importance.

BF-65 was buried with a spear (11.3%) and shield (5.0%), both typical of EAS weapons burials. In BF-65's case, the severe facial trauma observed may have been caused by a weapon, possibly during a battle, although other situations which might give rise to traumatic injuries should not be ignored (e.g. small-scale interpersonal violence, accident). Therefore, it is possible that BF-65 was afforded a weapons burial because he was, in fact, a warrior (but see Sections 3.2.6.3.1 and 7.2.4.5 for other possibilities). Perhaps the very visual reminder of BF-65's military prowess, which would have been evident in every

social interaction with him, was not considered an impairment, but rather a reason to respect and glorify him.

Although the motivations for the inclusion of a spear and shield in BF-65's grave can only be speculated about, what is important to note is that, despite his visual distinctiveness (which may not have caused any physical impairment), his family/community considered it appropriate to afford him various funerary rites (e.g. stone lining, inclusion of weaponry, insertion of further burials) indicative of care, respect, and a potentially higher social status.

7.3.4.3 Butler's Field 75

BF-75 ("Final Phase", middle adult male) had spinal tuberculosis resulting in severe kyphosis. Kyphosis of this degree can result in paraparesis or paraplegia of the lower limbs, loss of urinary/faecal control, pain, sensory impairment, and an abnormal gait (Turgut 2001; Resnick 2002g), all of which would probably have negatively affected normal social and economic participation.

BF-75's grave is directly in line with the row of graves that forms the south-western border of the Migration cemetery (BF-61 and BF-63 in square C1 to BF-35 in square C3) (Figure 7.25). It is likely that the Migration period graves were still visible above ground during the "Final Phase", which is strengthened by the fact that "Final Phase" burials BF-9, BF-75, and BF-76 surround but do not cut Migration burial BF-10 (square C1, Figure 7.25). Although BF-75 (SE-NW) is placed in line with the marginal Migration burials, he was buried at an orientation perpendicular to these graves (SW-NE), perhaps to distinguish him from the earlier interments.

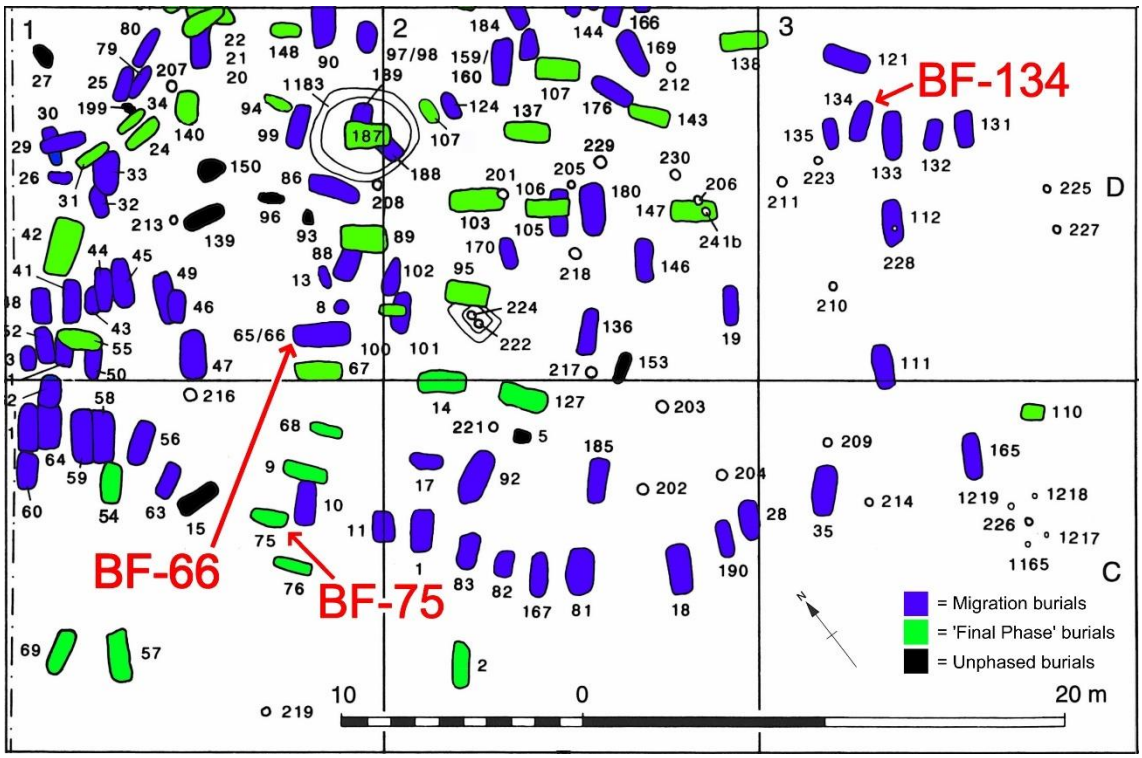

Figure 7.25- Map of the Butler's Field cemetery illustrating the south-western margin of the Migration cemetery and the locations of the individuals with physical impairment (in red). Source: Boyle et al. (2011:7), and modified by current author. © Oxford Archaeology.

Although BF-75 was buried in a marginal location which set him apart from other "Final Phase" individuals, who were buried more centrally clustered around the Bronze Age barrow cemetery (Sayer and Wienhold 2013), it should be noted that several other "Final Phase" burials at the same orientation as BF-75 were buried in close proximity to him. There are also nine isolated "Final Phase" burials which are farther outside the cemetery than BF-75, suggesting that, while burial in isolation was an option in this period, BF-75 was purposefully included in the cemetery, but placed in a marginal position. As mentioned in the discussion of BF-6's isolated burial location (Section 7.3.4.1), the motivations behind specific burial location are extremely complex and can only be speculated about. Visual distinctiveness and functional restriction as influencers of marginal burial location should not be dismissed, but should be considered alongside the myriad of other potential factors including age, sex, social/economic status, relationships with family and/or community, personal behaviour, manner of death, etc.

The skull of BF-75 was propped up against the side of the grave, a head position which was unique in this cemetery (Figure 7.24). It is possible that due to the gibbus deformity caused by kyphosis, BF-75's body did not lie flat on the

ground, and it was necessary to prop up the skull so that it did not fall back. This would be an indication that those who were burying BF-75 were aware of his condition, and went so far as to make adaptations to the body position to accommodate his physical alterations. On the other hand, it is also possible that BF-75 was placed rather carelessly into a grave that appears long enough to accommodate his full length, and that rather than moving the body down to fit properly into the grave, those burying him left his upper half crowded against the head end of the grave. This is less likely, however, as both upper limbs appear carefully rather than carelessly positioned.

7.3.4.4 Butler's Field 134

BF-134 (Migration phase, unsexed adolescent) (Figure 7.24) had a fracture and severe shortening of the right humerus along with a probable fracture of the right proximal radius, and trauma to the left elbow joint. These alterations would probably have restricted use of both upper limbs, particularly the right due to the shortening of the humerus, which, along with being visually distinctive, would have altered the natural movement of the arm.

BF-134 was buried towards the southern edge of the cemetery, but was part of a row of four other similarly oriented burials (Square D3, Figure 7.25). BF-134 was buried with the only bronze balance pan that was found in the cemetery, and a brooch and pin (which make it more likely that this individual was female). In 1990, only 13 grave good assemblages including balance pans, balances, and/or weights had been excavated in EAS cemeteries (Scull 1990). Scull (1990) suggests that balance pans such as the one found with BF-134 were used to weigh coin for currency. Many similar items have been found in France, Belgium, the Rhineland, southern Germany, and Switzerland, and the fact that they are mostly concentrated in Kent and the Thames Valley in England is indicative of a close relationship between this area of England and the Merovingian Kingdoms (Scull 1990). Examples of balance pans with associated weights are only associated with male graves, while balance pans without weights are associated with female graves, perhaps suggesting that "the status or social identity of men buried with balances and standard weights was to some extent linked with their involvement in bullion transactions" (Scull 1990: 207).

Although the balance pan included in BF-134's burial is fragmentary and is not associated with any weights, it is noteworthy that such an object was included in the grave of an individual who was only 14-16 years of age. Perhaps even at an early age, BF-134 already occupied a social or economic role associated with bullion transactions. Or perhaps their family was involved in this trade and it was expected that, had BF-134 lived longer, they would have continued the family tradition. Perhaps the balance pan had more symbolic connotations and was meant to reflect (or exaggerate) the family's or community's association with an individual who occupied an economic role involving bullion transaction. It seems likely that such an economic role would bring with it an increased amount of authority, as an individual in charge of bullion transactions may have had a degree of control over financial arrangements within a community, and potentially on a more regional scale. Therefore, the inclusion of a symbol of a high-status occupation might serve to improve the social or political reputation of the family or community involved. Or perhaps, as bronze balance pans may suggest a close relationship with the Merovingian Kingdoms, the inclusion of this object symbolised BF-134's family's or the Butler's Field community's strong ties to foreign powers.

While the motivations for the inclusion of a bronze balance pan in the grave of BF-134 can only be speculated about, it is important that such an object was included in the grave of an adolescent individual who was both visually distinct and functionally restricted. Despite BF-134's differences, those burying this individual felt that it was important and appropriate to include an item which may have directly reflected the occupation of BF-134 or their family members, or may have had more symbolic implications meant to enhance the social, political, or financial reputation of BF-134's family or the Butler's Field community as a whole.

7.3.4.5 Grave location

The grave location of the four individuals with physical impairment at Butler's Field is of note. Besides BF-65, who had visible rather than functional alterations and may have occupied a socially significant warrior role, the three other individuals with physical impairment were buried in either marginal locations or in isolation. Therefore, there may be a connection between physical impairment and non-central location at Butler's Field. It seems unlikely that a

lower economic status and an inability to afford central burial can explain the marginal location of the individuals with physical impairment, as several other burials also located in marginal positions (BF-11 with two brooches, beads, a bucket, and a brass bowl; BF-112 with a spear, knife, buckle, and shield, etc.) were buried with rich assemblages of grave goods.

Although marginal burial should not be considered deviant (while burial in isolation potentially can), factors that might influence deviant burial should be considered as factors that might also impact marginal burial. Based on ethnographic evidence, various situations or conditions necessitate deviant burial including but not limited to: suspicious or bad deaths (e.g. hit by lightning, drowning, violent death, suicide, murder, childbirth), disease or abnormal physical or mental conditions, heresy or excommunication, foreignness, immoral actions or behaviours, the conditions of birth, and family status (Ucko 1969; Shay 1985; Tsaliki 2008). Although these examples come from modern data, it is certainly possible that some of these factors may have influenced deviant or perhaps marginal burial in Anglo-Saxon society.

It is therefore possible that BF-6, BF-75, and BF-134 were buried on the margins because of their physical impairments, which caused both visible deformity and functional restriction. Perhaps because they looked different or were not able to contribute properly to society, they were more vulnerable to negative attitudes from their community, and it was not considered appropriate to bury them in the centre of the cemetery. However, while physical impairment as an influencer of marginal burial at Butler's Field must remain a possibility, the other factors mentioned above should also be considered.

7.3.4.6 Summary

Although there was no uniform treatment of the individuals with physical impairment in death at Butler's Field, it is interesting that a possible pattern emerges, with a majority buried in marginal or isolated locations. There were other graves in isolated or marginal locations at Butler's Field that did not exhibit any evidence of skeletal physical impairment, therefore it is clear that physical impairment was not the *only* cause for this funerary treatment. However, because all three individuals who would have been functionally impaired and visually

distinctive *were* buried in isolated or marginal locations, it is possible that physical impairment was considered an appropriate reason for this funerary treatment. This theory is strengthened by the fact that BF-65, who was visually distinctive but probably not functionally restricted, was afforded mortuary treatment more suggestive of respect and increased effort (e.g. central burial, stone lining, expansion of grave for further inhumations, inclusion of weaponry). This might suggest that there were different social perceptions regarding visual difference and functional impairment. However, it should be kept in mind that BF-65 may have avoided more negative perceptions because his visual distinctiveness might have been considered a symbol of his strength or his contribution to society if the traumatic facial injury was the result of an act of military prowess or heroism.

7.4 Edix Hill

7.4.1 General funerary treatment

The funerary treatment variables which were recorded for the Edix Hill cemetery (6th to 7th centuries) based on information provided by Malim and Hines (1998c) include grave dimensions, type, shape, orientation, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, marker posts, barrow mounds, other individuals (multiple burial), and grave goods.

7.4.1.1 Grave orientation and shape

A majority of individuals (59.8%) were oriented generally S-N, while general W-E orientation was also very common (39.3%). Four grave types (pit, scoop, spread, and bed) and four grave shapes (sub-rectangular, rectangular, oval, and irregular/other) were recorded (Malim and Hines 1998c). A majority of the individuals were buried in sub-rectangular (67.0%) pit (64.9%) graves. Two adult females are notable as they were buried in bed burials (1.5%).

7.4.1.2 Body and limb positioning

A large majority of the individuals were both supine (80.0%) and extended (72.1%), although flexed burials were relatively common (25.6%). Right (8.4%)

and left (9.5%) side burials along with prone burials (2.1%) are considered non-normative in this cemetery. One individual (EH-119, middle adult female) was buried in a small pit in a position that was classified as contorted- the positioning of the limbs could not have been achieved if the body had been “intact” (Malim and Hines 1998c: 59). It was more common for non-adults than adults and males than females to be buried in the flexed position (Appendix 2: Section 3). Of the adult burials, only females were buried on the left side.

Malim (1998c) proposes that the positioning of the arms was used to enhance the visibility of the accompanying grave goods. Shields were placed above the bent arms of many males, the extension of EH-683’s left arm allowed an unobstructed view of the accompanying chatelaine, and the arms of EH-428 and EH-126 were bent around an elephant ivory purse ring and a garnet brooch respectively.

Malim (1998c) suggests that leg position may have been related to gender, as it was more common for males (22.6%) than females (3.1%) to be buried with legs bent to the right, while it was more common for females (21.9%) than males (3.2%) to be buried with legs bent to the left (Appendix 2: Section 3). It was also more common for non-adults to be buried with the legs bent right/left than adults (Appendix 2: Section 3).

7.4.1.3 Structures and furniture

There was no direct evidence of coffin use at Edix Hill in terms of surviving wood or wood stain, however Malim (1998c) argues for the use of coffins based on a variety of other features including regularity and depth/width of the grave cut, and movement of bones during decomposition. The coffins would probably have been simple planks of wood covering the grave cut, or possibly planked boxes that were held together by non-metallic dowels (Malim 1998c). Twenty-seven possible and probable cases of coffin use (18.3%) were concentrated at the crest of Edix Hill, potentially indicating a high status burial zone (Hines 1998b).

Marker posts were possibly identified in 11 graves (7.4%) and also tended to be concentrated at the crest of Edix Hill. Marker posts must have been used at Edix Hill as, while contemporary disturbance occurred frequently, most of these

disturbances were no more than the edge of one grave-cut overlapping another (Malim 1998c).

Stones were included in the graves of ten individuals (6.8%) and were more common in female graves (17.5%) than male graves (6.3%) (Appendix 2: Section 3). There were three instances of stones being placed around the legs/feet, four instances of stones being placed on and around the pelvis, one instance of stones used to surround the skull, and one instance of a layer of stones used to separate two burials in the same grave (Malim 1998c).

There is only direct evidence of a barrow mound for Graves 60, 61, and 62, which included two adult females and two non-adults. However, the shallowness of the graves at this cemetery suggests that mounds were probably used to more effectively cover the bodies and mark the locations of the graves (Malim 1998c). Alignment of burials with Iron Age ditches occurs in Edix Hill 28 times (18.9%). Some of these occurrences were interpreted as deliberate, while others were not (Malim 1998c). Alignments usually occurred when the Iron Age ditches were oriented west-east, however the Iron Age ditches that ran north-south did not appear to act as a focus point for burials (Malim 1998c).

7.4.1.4 Multiple burial

Forty individuals (27.0% of burial population) were involved in 18 multiple burials (five vertical sequential, four contemporary horizontal, three contemporary vertical, five unclear, and one which contained contemporary vertical and unclear components) (Malim and Hines 1998b). One of the vertical contemporary burials consisted of one individual laid on top of another with a layer of stones in between. Of the 18 multiple burials, 10 (55.6%) contained an adult and a non-adult. One vertical sequential grave consisted of two younger children, and the remainder of the multiple burials contained two adult individuals.

7.4.1.5 Grave goods

Table 7.10 provides a summary of the grave good types and frequencies at Edix Hill. It should be noted that there were some disturbed burials which were not associated with any small finds at the time of excavation, but may have had

grave goods at the time of burial. Therefore, it is possible that the percentage of individuals buried without grave goods is slightly increased.

Table 7.10- Grave good types and frequencies for the Edix Hill cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	34	23
Weaponry			
Spear	22	21	14.2
Shield	16	16	10.8
Dress accessories			
Buckle	51	45	30.4
Beads	1028	39	26.4
Brooch	36	20	13.5
Belt ring	35	17	11.4
Wrist clasp	26	10	6.8
Necklace ring	25	7	4.7
Pin	6	6	4.1
Chatelaine	4	4	2.7
Pendant	3	3	2.0
Bead tube	5	3	2.0
Bracelet	1	2	1.4
Spangles	1	1	0.7
Finger ring	1	1	0.7
Buckle plate	1	1	0.7
Tools and personal equipment			
Knife	59	58	39.2
Latch lifter	23	14	9.5
Comb	9	9	6.1
Spindle whorl	1	3	2.0
Tweezers	3	3	2.0
Girdle hanger	2	2	1.4
Key	1	1	0.7
Weaving batten	1	1	0.7
Bone point	1	1	0.7
Vessels and containers			
Pot sherds	6	6	4.1
Pot	4	4	2.7
Purse ring	4	4	2.7
Wooden vessel	4	4	2.0
Bucket	2	2	0.7
Wooden box	2	2	0.7
Bag complex	1	1	0.7
Other			
Glass fragments	3	3	2.0
Disc	3	3	2.0
Shell fragments	2	2	1.4
Tube	1	1	0.7
Fossil	1	1	0.7

7.4.2 Palaeopathological analysis

Six individuals were identified as potentially physically impaired (4.1% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.11. Refer to Appendix 3: Section 4.2 for detailed differential diagnoses for each individual.

Table 7.11- Summary of the palaeopathological analysis of the individuals with physical impairment from Edix Hill.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
EH-29	MA	F	- Ankylosis of L ?MT1 to ?medial + intermediate cuneiforms - Ankylosis of L ?MT4 + ?MT5 with ?cuboid - Thinning of shafts of L ?MT2-MT5 + medial angulation of proximal L ?MT2	- Joint diseases - Leprosy - Reiter's syndrome - Osteomyelitis - **Trauma + non-specific infection**	- Swollen, painful L foot→ possible restricted movement + abnormal gait	Possible; acquired (med-long)	Figure 7.26-Figure 7.27
EH-42B	MA	F	- Rounding of nasal aperture margins - Resorption of nasal spine - Porosity of interior of nasal aperture - Bilateral tibial periostitis (not analysed by current author)	- Treponemal disease - **Leprosy**	- Rhinomaxillary syndrome→ nasal discharge, clogged airway, lips/ tongue/palate nodules, + saddle nose deformity - Pain, loss of sensation in extremities, + probable infection of foot via plantar ulcer→ ?abnormal gait - Possible: skin lesions, hair loss, lagophthalmos, + blindness	Convincing; acquired (med-long)	Figure 7.28
EH-130	ADO	US	- Diffuse porous PNB deposition across R ilium, ischium, + pubis - PNB deposition has deformed overall shape of R ilium	- Skeletal metastasis - Fluorosis - **Non-specific inflammation/osteomyelitis**	- Pain in hip + buttocks - Weakness, fever, + chills - Difficulty walking + abnormal gait	Probable; end of life	Figure 7.29

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
EH-146	MA	M	- Irregularly shaped lytic lesions with sharp edges + evidence of trabecular remodelling throughout axial skeleton	- LCH - Multiple myeloma - **Metastatic carcinoma**	- Bone pain, cranial nerve palsy, + headache - Pain in neck, back, + lower legs→ ?abnormal gait - Weakness, paralysis, + incontinence if spinal cord compressed - Hypercalcaemia→ fatigue, deterioration of mental functioning, dysfunction of gastrointestinal, kidney, rectal, + central nervous systems	Probable; end of life	Figure 7.30-Figure 7.31
EH-322A	Adult	M	- Collapse of anterior L5 + ankylosis with S1 through smooth bony bridging - Large oval cloacae within bony bridging	- Vertebral osteomyelitis - **Tuberculosis**	- Hypolordosis→ back pain - General symptoms: weakness, fatigue, weight loss, fever, etc.	Probable; acquired (med-long)	Figure 7.32
EH-440A	MA	F	- Deformation of R elbow joint (all elements affected)→ fixed pronation of R forearm - R femur slightly shorter than L	- Tuberculous arthritis - Septic arthritis - **Traumatic injury + infection + secondary OA**	- If not fully healed→ pain + swelling - Restricted use of R arm due to pronation fixation	Convincing; acquired (med-long)	Figure 7.33-Figure 7.34

NB: differential diagnoses in **bold** are considered the most likely.

Figure 7.26- Irregularly shaped ankylosed bony unit most likely consisting of the left MT1 and the L medial cuneiform of EH-29. Produced with kind permission of Cambridgeshire County Council.

Figure 7.27- Probable LMT2 and LMT3 of EH-29 demonstrating medial-lateral thinning and distal resorption. Note the medial angulation of the proximal end of ?LMT2 (left). Produced with kind permission of Cambridgeshire County Council.

Figure 7.28- Bilateral rounding of the nasal aperture margins of EH-42B. Produced with kind permission of Cambridgeshire County Council.

Figure 7.29- Irregular, porous new bone growth on the medial aspect of the right ilium of EH-130. Produced with kind permission of Cambridgeshire County Council.

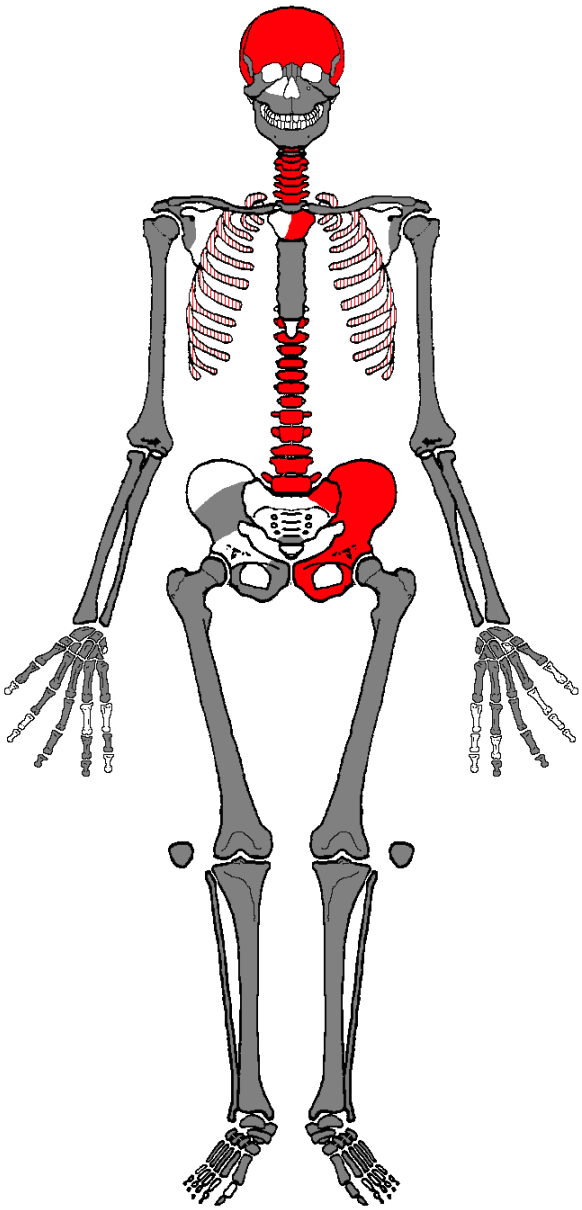

Figure 7.30- Distribution of lytic lesions in EH-146 (red). NB: Grey indicates which elements were present for analysis.

Figure 7.31- Sharp-edged, irregularly shaped area of lytic destruction on the left side of C4 (left) and on the right internal aspect of the frontal bone (right) of EH-146. Produced with kind permission of Cambridgeshire County Council.

Figure 7.32- Ankylosis of L5 and S1 of EH-322A with cloacae observed in the bony bridging on the right and left sides. Produced with kind permission of Cambridgeshire County Council.

Figure 7.33- Deformation of the proximal end of the right radius of EH-440A. Produced with kind permission of Cambridgeshire County Council.

Figure 7.34- Articulation of the right upper limb of EH-440A, demonstrating the fixed pronation of the forearm. Produced with kind permission of Cambridgeshire County Council.

7.4.3 Funerary treatment of the individuals with physical impairment

The average grave dimensions for the adult and non-adult burial populations as well as the dimensions of the graves of the individuals with physical impairment are provided in Table 7.12 and Table 7.13 respectively.

Table 7.12- Grave dimensions for the adult burial population and for the adult individuals with physical impairment at Edix Hill.

	Length (m)	Width (m)
Site average	1.87	0.80
Standard deviation	0.24	0.19
EH-29	1.60	1.0
EH-42B	2.30	0.92
EH-146	2.25	1.1
EH-322A	2.30	0.70
EH-440A	1.80	0.72

NB: Underlined values are more than one standard deviation from site average.

Table 7.13- Grave dimensions for the non-adult burial population and for the non-adult individual with physical impairment at Edix Hill.

	Length (m)	Width (m)
Site average	1.48	0.69
Standard deviation	0.40	0.17
EH-130	1.60	0.70

Only about 40% of the cemetery was excavated (Duhig 1998), and none of the borders of the cemetery were determined. Because the boundaries of the cemetery are unknown, it is not possible to locate marginal areas. However, as demonstrated in Figure 7.35, there is no clustering of the individuals with physical impairment, nor are they buried in isolated locations.

Table 7.14 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment. Table 7.15 provides a summary of the grave goods found in association with the individuals with physical impairment.

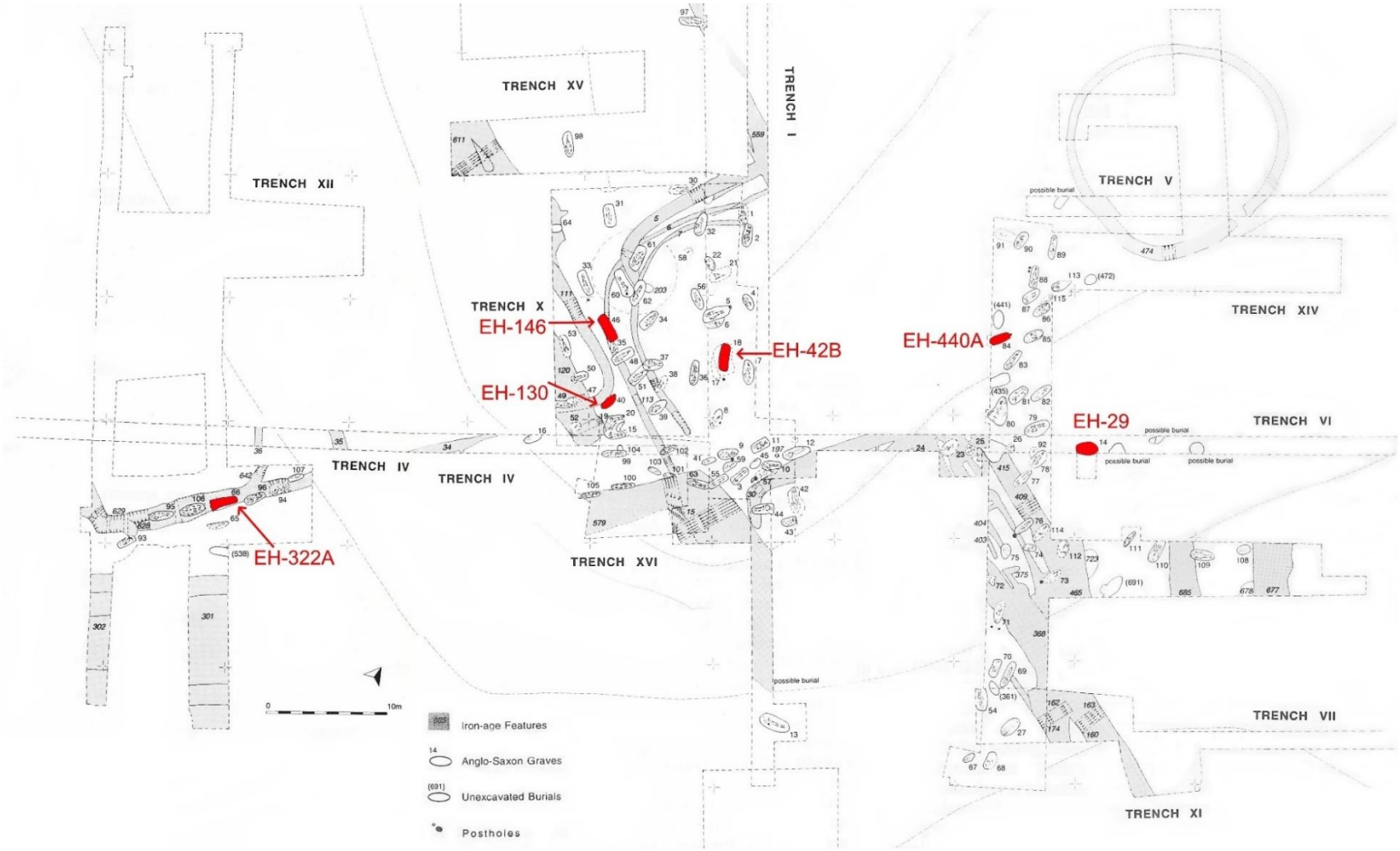

Figure 7.35- Map of the Edix Hill cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Malim (1998c: 23-5), and modified by current author. © Council for British Archaeology and reprinted with kind permission of Tim Malim.

Table 7.14- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Edix Hill.

Variable	N	Type	n	% of pop	EH-29	EH-42B	EH-130	EH-146	EH-322A	EH-440A
Grave type	131	Pit	85	64.9	Scoop	Bed	Scoop	Pit	Pit	Pit
		Scoop	27	20.6						
		Spread	17	13.0						
		Bed	**2**	**1.5**						
Grave shape	106	Sub-rectangular	71	67.0	Oval	Sub-rectangular	Oval	Sub-rectangular	Sub-rectangular	Sub-rectangular
		Oval	21	19.8						
		Rectangular	**9**	**8.5**						
		Irregular/other	**5**	**4.7**						
Grave orientation	122	SE-NW	2	59.8	WSW-ENE	SSE-NNW	SSW-NNE	SSE-NNW	SW-NE	WSW-ENE
		SSE-NNW	18							
		S-N	1							
		SSW-NNE	41							
		SW-NE	11							
		WSW-ENE	42	39.3						
		WNW-ESE	6							
		ENE-WSW	**1**	**0.8**						
Body orientation	95	Supine	76	80.0	R side	Supine	Prone	Supine	Supine	Supine
		L side	**9**	**9.5**						
		R side	**8**	**8.4**						
		Prone	**2**	**2.1**						
Body position	86	Extended	62	72.1	Flexed	Extended	Flexed	Extended	Extended	Extended
		Flexed	22	25.6						
		Crouched	**1**	**1.2**						
		Contorted	**1**	**1.2**						

Variable (cont'd)	N	Type	n	% of pop	EH-29	EH-42B	EH-130	EH-146	EH-322A	EH-440A
Head position	60	R facing	20	33.3	R facing	Upright facing	R facing	Forward facing	N/A	Forward facing
		L facing	16	26.7						
		Forward facing	18	20.0						
		Upright facing	6	10.0						
Arm position	70	Both bent	27	38.6	Both bent*	R straight, L bent	R straight, L bent	Both bent	N/A	Both bent
		Extended	21	30.0						
		R straight, L bent	14	20.0						
		L straight, R bent	8	11.4						
Leg position	91	Extended	64	70.3	Bent R*	Extended	Bent R	Extended	Extended	Extended
		Bent R	14	15.4						
		Bent L	13	14.3						
Coffin use	148	Absent	121	81.8	Absent	Absent	Absent	Possible	Absent	Absent
		Possible/present	27	18.2						
Barrow	148	Absent	144	97.3	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**4**	**2.7**						
Iron Age feature	148	Absent	120	81.1	Absent	Absent	Present	Absent	Present	Absent
		Present	28	18.9						
Marker post	148	Absent	137	92.6	Absent	Absent	Absent	Absent	Absent	Present
		Present	**11**	**7.4**						
Stone inclusion	148	Absent	138	93.2	Absent	Absent	Absent	Absent	Absent	Stones on and around pelvic area
		Present	**10**	**6.8**						
Multiple burial	148	Single burial	108	73.0	Single	Vertical sequential	Single	Single	Single	Contemporary vertical
		Vertical sequential	**12**	**8.1**						
		Unclear	**12**	**8.1**						
		Contemporary horizontal	**8**	**5.4**						
		Contemporary vertical	**8**	**5.4**						

Variable (cont'd)	N	Type	n	% of pop	EH-29	EH-42B	EH-130	EH-146	EH-322A	EH-440A
Grave goods	148	Other	45	30.4	Jewellery	Jewellery	Other	Weapon	Weapon	Jewellery
		Jewellery	43	29.1						
		None	34	23.0						
		Weapon	26	17.6						

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the burial population; *= variable category is normative but specific arrangement of limbs is unique.

Table 7.15- Grave goods found in association with the individuals with physical impairment at Edix Hill.

Ind. no.	Grave goods	% of graves
EH-29	1. Knife	39.2
	2. Beads (7 polychrome glass, 5 amber)	26.4
	3. Comb (antler, double-sided composite)	6.1
	4. Pot (complete)	2.7
EH-42B	1. Knives (x2)	39.2
	2. Bead (glass)	26.4
	3. Rod (iron, possibly a nail)	25.0
	4. Comb (antler, single-sided composite)	6.1
	5. Necklace rings (x2, silver)	4.7
	6. Sheep astragalus	2.0
	7. Spindle whorl (antler)	2.0
	8. funerary bed: 11 eyelets (iron) + 6 cleats (iron) + 2 headboard stays (twisted iron)	1.4
	9. Key (iron)	0.7
	10. Bucket hoops and handle (iron, from oakwood bucket)	0.7
	11. Weaving batten (iron)	0.7
	12. Fossil sea urchin	0.7
	13. Iron bracket and angled rod (probable remains of iron bound wooden box)	-
	14. Copper alloy sheet (folded, could be from mount or pendant)	-
	15. Glass fragment	-
	16. Iron fragments (most unidentifiable)	-
EH-130	1. Pot sherds	4.1
EH-146	1. Knife	39.2
	2. Buckle (iron, oval loop)	30.4
	3. Spearhead	14.2
	4. Shield (boss, grip, rim fragments, rivets)	10.8
	5. Copper alloy object (unidentified)	-
	6. Glass fragment	-
	7. Disc (ceramic)	-
EH-322A	1. Buckle (iron, oval loop)	26.4
	2. Spearhead	14.2
	3. Shield (iron studs x5)	10.8
	4. Vessel mounts (for wooden vessel)	2.0
EH-440A	1. Buckle (iron, oval loop)	30.4
	2. Beads (2 glass, 29 amber)	26.4
	3. Nail (iron)	12.8

7.4.4 Interpretations

The grave drawings of the individuals with physical impairment are provided in Figure 7.36.

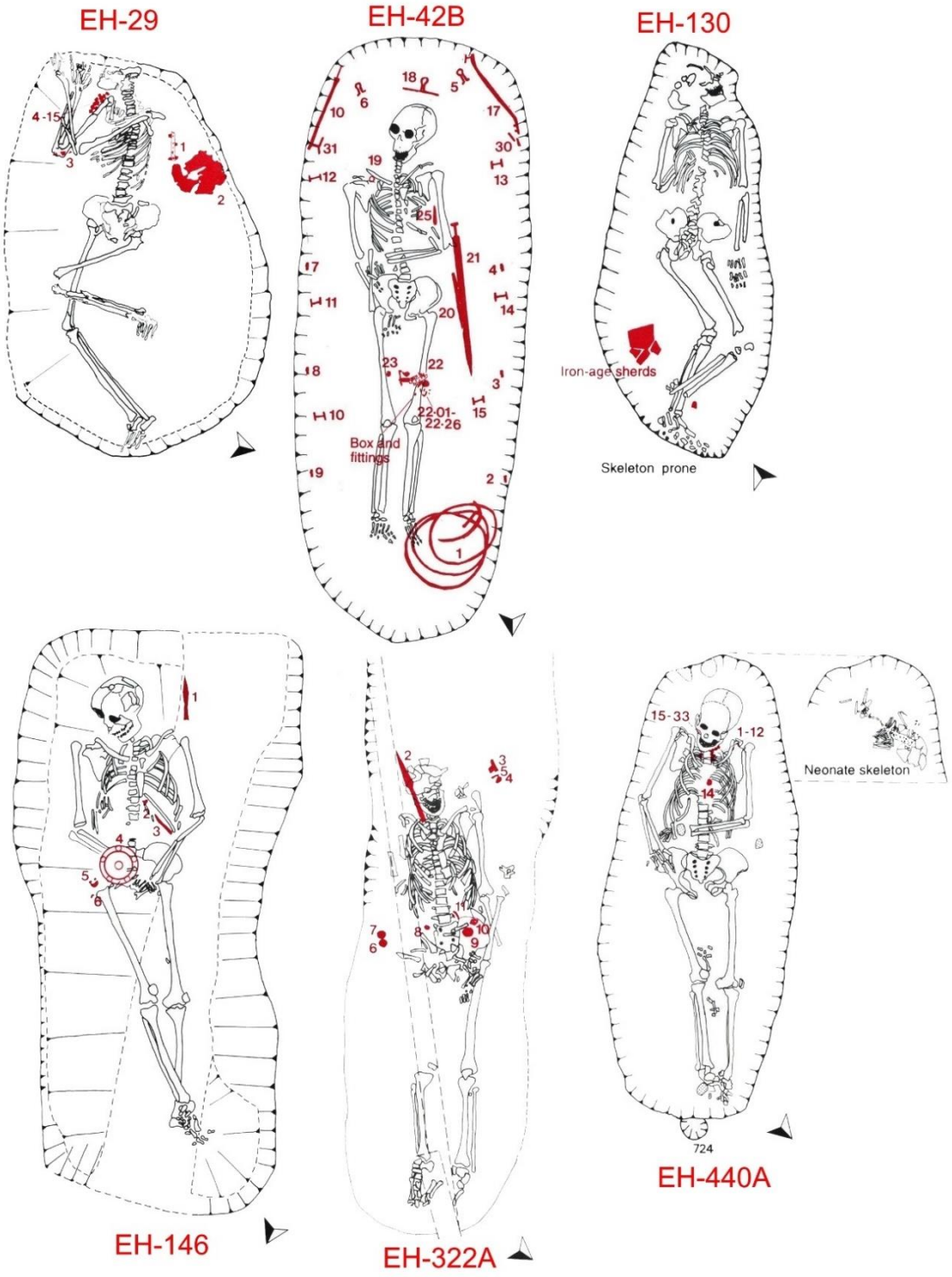

Figure 7.36- Grave drawings for the individuals with physical impairment at Edix Hill. Source: Malim and Hines (1998a), and modified by current author. © Council for British Archaeology and reprinted with kind permission of Tim Malim.

7.4.4.1 Edix Hill 29

EH-29 (middle adult female) experienced ankylosis of the left foot bones (possibly due to trauma and subsequent infection), which may have caused pain

and deformation of the foot, and restricted use of the left leg. Both the arm and leg positions of EH-29 were unique in this cemetery, with the left leg bent much more than the right and drawn up towards the body (Figure 7.36). Perhaps those burying EH-29 were aware of the pain she experienced, and the unique positioning of the leg closer to the body was meant to keep EH-29 comfortable in death. While burial with both legs bent was certainly not uncommon at Edix Hill, it is notable that the only individual with this particular leg positioning also experienced physical impairment in the lower limbs.

EH-29 was buried in a grave that was more than one standard deviation shorter than the site average, and her head and feet were placed directly against either side of the grave. This might indicate that those burying her knew about her lower limb impairment and that she would be buried in a somewhat flexed position, so they did not make the grave as long as usual. Lack of respect or responsibility on the part of those digging the grave are less likely explanations for this short grave, because EH-29's grave was also more than one standard deviation wider than the site average, which would have required more effort.

Along with a knife (39.2%), comb (6.1%), and beads (26.4%), EH-29 was buried with a complete pot, which was found in only three other graves (2.7%). Two of these individuals were non-adults (one infant, and one 18-month-old buried with an adult female), and the other was another middle-adult female, suggesting that perhaps pots were usually associated with women and children in mortuary contexts. While the sample size from Edix Hill is small, a comparative cemetery at Great Chesterford demonstrates a somewhat similar pattern: of the 28 pots included in inhumation burials, ten were buried with males, seven with females, and 11 with non-adults (seven of which were buried with infants) (Evison 1994: 21). At Windmill Hill (see Section 7.9.4.3), of the eight individuals buried with complete ceramic pots, all were non-adults or adult females. It has also been noted that, in general, furnished EAS non-adult burials most commonly included gender "neutral" grave goods (including pots) (Stoodley 2000; Crawford 2007). Therefore, the pot in EAS England may in some cases be symbolically linked to a non-adult identity or potentially to the relationship between females and non-adults (as a mother or as a carer). Perhaps a pot's ability to hold sustenance was symbolically linked to a child's need to be provided with nourishment in life (and death?) or a female's biological ability to provide that nourishment. Thus, the

inclusion of a complete pot in EH-29's grave implies that she may have had a socially inclusive gendered role. However, it can also be argued that the association of an adult individual with physical impairment and a grave good typically linked with non-adults might ascribe that adult individual with a child-like status, or that her vulnerability meant she needed to be provided with sustenance in the afterlife.

7.4.4.2 Edix Hill 42B

EH-42B was a middle adult female who had leprosy. The alterations observed in the nasal area would probably have led to a visually distinctive face with underlying bony deformity and fluids exiting the nose and mouth area (Andersen and Manchester 1992). The bilateral tibial and fibular periostitis observed by previous researchers (see Appendix 3: Section 4.2.2.) was probably the result of desensitisation of the nerves of the lower limb and subsequent infection (Resnick 2002g), potentially from a plantar ulcer. Periostitis would have probably caused pain (Golding 1985) and subsequent mobility issues. Therefore, EH-42B would have been both visually distinctive and functionally restricted, and the surrounding community would certainly have been aware of her illness.

EH-42B (Figure 7.36) was one of two individuals in this cemetery to be afforded a bed burial, as demonstrated below in an artist's reconstruction (Figure 7.37). Bed burial is a 7th century funerary rite which, while rare, was in use throughout several areas of southern Anglo-Saxon England. Speake's (1989) investigation identified nine probable examples of bed burials and demonstrated that, in a majority of cases, bed burials were reserved for females and were richly adorned with grave goods, as was the case with EH-42B. No other association between bed burials and physical impairment has been observed

Figure 7.37- Artist's reconstruction of the bed burial of EH-42B by C. Malim. Source: Malim and Hines (1998c: cover). © Council for British Archaeology and reprinted with kind permission of Tim Malim.

The inclusion of an entire bed within a grave would have required increased effort on the part of those burying EH-42B: materials were gathered (wooden planks, metal cleats and eyelets), the bed was constructed, an appropriate sized grave was dug (which was more than one standard deviation longer than the site average), the bed was carefully lowered and positioned in the grave, the body of EH-42B was placed upon the bed and properly positioned, and then the grave goods were arranged on top of the body. The fact that those burying EH-42B invested so much effort in the funerary process suggests that EH-42B was an individual of importance in the Edix Hill community.

EH-42B was buried with various unique grave goods including a key, weaving batten (a cut down sword with a modified tip), spindle whorl, sea urchin fossil, and sheep astragalus (foot bone). EH-42B's grave good assemblage was clearly very different from the average female grave good assemblage found at Edix Hill, therefore it is possible that EH-42B held a role that was also different from the average female role. Perhaps the sea urchin fossil and sheep astragalus had amuletic functions, while the weaving batten might have been considered symbolic of protection. Although the weaving batten could be reflective of an economic role usually associated with women such as weaving, the fact that a

functional sword was removed from circulation to be associated with this female individual in death (and perhaps in life) has more ritualistic undertones. Could EH-42B have had some sort of spiritual or religious role in the protection of her family or the community? An individual who was considered capable of spiritually guarding the community would certainly have been an important social figure, which might explain why EH-42B was buried on a funerary bed.

It is also possible that EH-42B was buried on the funeral bed because she was ill, and the bed was a symbol of comfort and care in the afterlife provided by those burying her. However, there were other individuals with illness and physical impairment in this population who were not provided funerary beds, and there was another individual buried with a funeral bed (EH-183, middle adult female) who did not have evidence of skeletal physical impairment. Therefore, it is more likely that EH-42B occupied an important social role, and that it was her status in life that warranted the special treatment she received in death.

7.4.4.3 Edix Hill 130

EH-130 (14-16-year-old unsexed adolescent) had probable osteomyelitis of the pelvis, which probably resulted in difficulty walking and an abnormal gait (Highland and LaMont 1983; Davidson et al. 2003). EH-130 was one of only two prone burials at Edix Hill (2.1%) (Figure 7.36). They were buried with both legs bent left (3.4%) and with Iron Age pot sherds, which were found in five other burials (4.1%). The other prone individual (EH-33, Grave 16) was a middle adult male with no evidence of skeletal physical impairment who was buried relatively close to EH-130, at the same orientation and in alignment with the same Iron Age topographical feature.

Prone burial was non-normative in the Edix Hill population, and it is tempting to ascribe this burial treatment with negative connotations: perhaps burial with the face down was used to indicate that the individual had lived a shameful life, that they were socially deviant, or that the living had to be kept safe from the individual, even in death (Reynolds 2009: 68-9). Previous researchers have come to various conclusions about prone burial in EAS contexts: Faull (1977) associates prone burial with witchcraft and with native British individuals who did not assimilate well into Anglo-Saxon society, Sherlock and Welch (1992:

26) posit that prone males were warlocks, and Evison (1987: 134) suggests that this body positioning was a mark of treachery or cowardice.

Reynolds' recent survey of EAS prone burials concluded that there was no standardised demographic or social patterning for prone burial in EAS England (2009: 68-9). Contrary to previous statements which claimed that prone burials were primarily female, Reynolds (2009: 72) found that of 115 prone burials from 60 EAS cemeteries, 32% were male, 45% were female, 15% were unsexed adults, and 8% were non-adult. Reynolds (2009: 72) also found that grave good assemblages associated with prone burials varied widely: while a majority of burials were either unfurnished or poorly furnished, 20% included standard kit, and 14% were well-furnished. Thus, it is clear that there was not one type of person who was considered appropriate for burial in the prone orientation.

Within his sample of 115 EAS prone burials, Reynolds (2009: 74) identified a handful of individuals who were also afforded other deviant funerary rites: six individuals had either tied hands or feet, two individuals were decapitated, three individuals were weighted down with stones or flints, and two individuals had limbs amputated after death. The left forearm of the male in Grave 71 at Blacknall Field, Pewsey had been amputated in life and healed, but his feet had also been removed perimortem (Reynolds 2009: 74). The female in Grave 114 at West Heslerton had significant asymmetry in the post-cranial skeleton (interpreted as from a stroke), her left foot was removed perimortem, and her legs may have been tied (Reynolds 2009: 74-5). These final two examples are perhaps the most applicable to the current study, as it is likely that the two individuals were physically impaired in life and also buried in the prone orientation.

As is perhaps expected of early Anglo-Saxons, there was a significant amount of variability in terms of who was afforded a prone burial. While there are examples of prone burials which also demonstrate other characteristics of deviant burial (perhaps indicating the deviancy of the individual in life), there are more examples of prone burials with no other deviant funerary aspects. With no written documentation, it is difficult to ascertain the true motivations behind prone burial in the EAS period. But, due to the variability of this practice, it is likely that prone burial had different meanings in different communities, and may have sometimes been considered a non-normative rather than deviant practice. Nevertheless, it is possible that the burial of EH-130 in the prone orientation was meant to convey

their social deviancy in life, and that it was their physical impairment (abnormal gait and restricted participation) that made them more susceptible to negative opinions from their community. However, as mentioned in Section 7.3.4.5, there are a myriad of potential motivations for deviant burial. Assuming that prone burial was meant to be considered deviant at Edix Hill, it is possible that factors such as the circumstances of death, family relations, or personality were more influential in the decision to bury EH-130 in a prone orientation, but the impact of a physical impairment should not be dismissed.

7.4.4.4 Edix Hill 146 and Edix Hill 322A

EH-146 (middle adult male) had metastatic carcinoma which can cause bone pain (Resnick 2002l) and hypercalcaemia, which results in fatigue, anorexia, constipation, and deterioration of mental functioning (Coleman 2006). It should be noted that without any medical treatment, it is unlikely that EH-146 survived very long once these symptoms manifested, but during this time he may have required short term care in order to survive (Section 10.2.2.5). EH-322A (adult male) had lumbosacral tuberculosis which would not have caused kyphosis, but probably resulted in pain (Rajasekaran et al. 1998), weakness, fever, and fatigue (Hopewell 1994), all of which would have affected his ability to participate normally.

Both EH-146 and EH-322A were afforded no unusual burial treatment with regards to grave structure or body position, but both were buried with a shield (10.8%) and a spear (14.2%) (Figure 7.36). While it is possible that EH-146 and EH-322A were warriors in life, research suggests that this is not necessarily the case (Section 3.2.6.3.1). Therefore, it is possible that the inclusion of weaponry in these two graves was a demonstration of the social or political standing of the individuals or their families (Härke 1990), or was used to bestow upon EH-146 and EH-322A an ideological identity (Brunning 2013) that might improve their (or their families') reputations (Section 7.2.4.5).

EH-146 was buried in a grave that was more than one standard deviation longer and wider than the site average, while EH-322A was buried in a grave that was more than one standard deviation longer than the site average. These large grave dimensions suggest that those constructing the graves would have had to

expend more effort and time than if they had dug graves of average dimensions. This increased effort, along with the potential elevated social status that is suggested by the inclusion of weaponry, indicates that EH-146 and EH-322A were respected in life. Neither of their physical impairments would have resulted in obvious visible distinctiveness, but they probably would have been functionally restricted (EH-146 only for a short amount of time). Despite this, it was considered appropriate to distinguish both men in death by burying them in larger graves with weaponry that was probably meant to symbolise their social importance in life.

7.4.4.5 Edix Hill 440A

EH-440A (middle adult female) experienced traumatic injury to the right elbow and pronation fixation of the right forearm. These alterations would have resulted in struggles with various activities and restricted upper limb dexterity (Simmons et al. 1983). EH-440A was not afforded any non-normative burial treatment with regards to grave structure or body position, however there were small stones found on and around the pelvis (Figure 7.36). Stone inclusion occurred in only ten burials at Edix Hill (6.8%), four of which contained small stones on and around their pelvis. All the individuals buried with stones around the pelvic region were female, suggesting that this was a rite reserved for females. Due to the location of the stones, it is possible that this rite was related to childbirth or the individual's status as a mother or as someone who was associated with children in life, perhaps as a caregiver, midwife, or mentor.

EH-440A and EH-440B (see below) were buried in a grave with a potential marker post. Eleven potential marker posts were identified at Edix Hill, although it is likely that marker posts were probably more frequent, but were lost due to poor preservation (Malim 1998c). Of the 11 marker posts identified, four belonged to middle adult females (36.3%), four belonged to non-adults (36.3%), and three belonged to younger adult males (27.7%). Therefore, a majority of the marker posts were found with the graves of females or children. Perhaps it was considered more appropriate to visually mark the graves of females and children, as their deaths may have had different social significance to the death of a male. Additionally, it is interesting that the only males who were buried with identifiable marker posts were young, and potentially had more social ties to childhood than adulthood. The fact that EH-440A was buried in a grave with a marker post

suggests that it was important to those burying her to mark her resting place, and, in conjunction with the inclusion of EH-440B (see below), suggests that she was of social importance.

EH-440A was buried with her skull resting on the neonate individual EH-440B (who was buried at the same time), a unique rite in this cemetery, which was perhaps further testimony to her association with children. Although burial of an adult with a non-adult is fairly common in EAS cemeteries (Stoodley 2002) and occurred in six other graves at Edix Hill, the laying of an adult head on the body of a non-adult is rare, and potentially unique to this cemetery. It should be noted that, although multiple burials involving an adult female and a non-adult are frequently interpreted as the burials of mothers and their children, without aDNA analysis, it is not possible to ascertain whether the neonate EH-440B was, in fact, EH-440A's child.

Crawford (2007) discusses the inclusion of non-adults in EAS multiple burials and proposes several explanations for this less frequent burial practice. The two individuals may have been close family members who died at the same time, but it is also possible that the bonds of affection could extend between a child and other members of the community (e.g. neighbours or less-closely related kin) (Crawford 2007). There is evidence for the existence of such relationships in literature from Christianised Anglo-Saxon England, however, "pre-Conversion social mores and structures remained embedded in later Anglo-Saxon society", and therefore may be applicable to the earlier period (Crawford 2007: 86). Another possible explanation is that the death of two individuals at the same time in what would have been relatively small communities might have caused particular social distress, requiring special mortuary rites to ameliorate the situation (Crawford 2007).

Crawford (2007) also proposes a more unique theory: that the bodies of non-adults may not have been considered bodies at all, but rather objects that added some sort of symbolic significance to the graves of the adult individuals. Crawford (2007: 88) discusses three graves from Castledyke South, Barton-upon-Humber: Grave 25 included a middle adult female with the teeth of a "smaller individual", Grave 42 included an older adult female with three teeth from an individual who was 10 years or older, and Grave 32 included an older child with the teeth of a younger child in a pouch. Crawford (2007) also discusses two

female inhumations from Edix Hill, including EH-440A. EH-20B (young adult female who had the largest 6th century "wealth score" based on the number of grave goods) was covered with a thin layer of soil, and infant EH-20A was placed on top of her left shoulder (Malim and Hines 1998a: 48-50). Finally, as previously mentioned, perinatal infant EH-440B was laid underneath the skull of EH-440A. Crawford (2007) proposes that it is possible that, in these cases, the burial centred around the deceased adult with the inclusion of the non-adult corpse as an object that added symbolic value to the funerary tableau in the same way as other grave goods. It is possible that our modern day biases and an emphasis on the agency of individuals, including non-adults, may be clouding our understanding of the Anglo-Saxon motivations for the inclusion of children in the graves of adult individuals (Crawford 2007).

There are therefore many interpretations for the placement of EH-440A's head on the body of EH-440B and the inclusion of the stones on the pelvis. It is possible that the two individuals were related (Stoodley 2002): perhaps EH-440A died giving birth to EH-440B, which was considered a bad death, and special mortuary treatment was employed to ease the social disruption caused by their passing. They might have been unrelated, but two simultaneous deaths in the community again warranted non-normative burial practice, with the two buried together to accompany one another in death (Crawford 2007). EH-440A may have occupied a role in society that was associated with children (e.g. caregiver, midwife, mentor) (Stoodley 2002), and perhaps this role was considered an essential aspect of her identity that should be reflected in death with the inclusion of a non-adult corpse and stones around the pelvis, the part of the body that protects the unborn child. All of the proposed scenarios do not have negative or exclusive undertones, but instead, suggest that EH-440A was included in her community. She may have occupied a normative or special social role despite her physical impairment, which would have restricted some aspects of social or economic participation.

The specific placement of EH-440A's skull on the body of EH-440B must be addressed. The positioning of the two bodies seems inherently unusual, as the weight of an adult skull on top of an infant might have damaged the child's body. If the two individuals were mother and child, perhaps the non-normative placement of the mother's head on top of the child had more negative

connotations, and the arrangement was meant to reflect the shameful circumstances of the child's birth, the bad death of the mother and child during childbirth, or the socially deviant actions of the mother, the father, or their families. Or perhaps the pillowing of EH-440's head on EH-440B suggests that EH-440B was included in the grave not as a body with agency, but as an object (Crawford 2007). If the two individuals were related, perhaps the placement of EH-440B was meant to reflect the comfort that the birth of a child provided for EH-440A in life. If the two were not related, perhaps the pillowing of EH-440A's head by a non-adult body was meant to demonstrate the important relationships EH-440A formed with children, and the comfort they provided her in life.

It is clear that the interpretations regarding the non-normative burial of EH-440A are complex and obscure, but it is likely that this unique mortuary treatment conveyed socially understood concepts that differed from the normal symbolism associated with the burial of an adult and a non-adult in EAS England. While many explanations have been proposed for the special treatment of EH-440A in death, these only remain speculation. It is important, however, to acknowledge that despite EH-440A's functional restrictions due to a traumatic elbow injury and forearm fixation, this special, symbolically imbued mortuary treatment was still considered appropriate for an individual who may not have been able to fully contribute socially and economically to her community.

7.4.4.6 Summary

The funerary treatment of the individuals with physical impairment at Edix Hill was variable, just as burial treatment of the able-bodied individuals was variable. It is interesting that the only physically impaired individual at Edix Hill who would have been very obviously visually distinctive (EH-42B) was afforded a bed burial, which required increased material resources, effort, and was probably indicative of high status, respect, and/or care in the afterlife. Similarly, EH-146 and EH-322A, both with invisible impairments that would have restricted normal participation, were buried with weapons that were potentially indicative of their social importance. From these three individuals, it seems likely that physical impairment at Edix Hill did not prohibit an individual from occupying normative and/or respected communal or familial roles.

On the other hand, the final three burials do not have overtly positive connotations reflecting respect and/or elevated social status. The unusual leg positioning of EH-29 might indicate that those burying her were aware of her physical impairment and made adaptations to the normal leg position to accommodate this impairment, but it is also possible that the non-normative leg positioning was unrelated. It is plausible that the special mortuary treatment afforded EH-440A is suggestive of her social inclusion or a special role, however, the motivation behind the pillowing of her head on the body of a neonate is obscure. Finally, the prone burial of EH-130 may have had deviant connotations, which could potentially have been related to their physical impairment, however, there are many other social factors that might have required deviant burial, if prone burial was intended to reflect deviancy at Edix Hill.

Thus, as at Apple Down and Butler's Field, it appears that community or family attitudes towards individuals with physical impairment varied, as inferred through mortuary treatment. Visual distinctiveness and functional restriction did not prevent individuals from occupying higher social statuses, nor did they require non-normative funerary treatment, but it is possible that visual or functional difference did influence some of the less frequent and potentially deviant funerary treatment observed in this cemetery.

7.5 Finglesham

7.5.1 General funerary treatment

The funerary treatment variables which were recorded for the Finglesham cemetery (6th to 7th centuries) based on information provided by Hawkes and Grainger (2006a) include grave dimensions, type, shape, orientation, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, marker posts, barrow mounds, other individuals (multiple burial), and grave goods. A majority of the graves were oriented WSW-ENE (66.4%) or WNW-ESE (26.0%). Sixteen individuals (7.1%) were oriented broadly S-N (SSE-NNW and SSW-NNE orientations included). Only a single individual was oriented NNW-SSE (0.4%).

7.5.1.1 Body and limb positioning

A large majority of the individuals were buried supine (91.8%) and extended (93.7%). Burial in the right/left side (4.8%; 2.7%) and prone (0.7%) orientations, and in the flexed (4.4%) or crouched (1.9%) positions is considered non-normative. Non-adults were more frequently buried on the right/left sides and in the flexed or crouched positions than adults (Appendix 2: Section 4).

7.5.1.2 Structures and furniture

Wooden grave furniture was found accompanying 86 individuals (38.6%). The presence or absence of wooden grave furniture was determined based on the remains of wood residue, evidence of nails and angle brackets in the appropriate places, differential packing of soil within the grave, and ledges dug into the sides of the graves which would have supported horizontal covers (Hawkes and Grainger 2006b). There were various types of wooden furniture observed in the Finglesham cemetery, including simple coffins, horizontal covers, sideboards, and boards on which the body was placed. Wooden furniture was included more frequently in adult graves than non-adult graves, and more commonly in the graves of females than males (Appendix 2: Section 4).

Two types of holes were identified in this cemetery: post-holes, which may have held up pitched roof structures (usually occurred in pairs on opposite sides of the grave), and marker post holes, which may have held some sort of wooden post that marked the location of the grave above ground (usually occurred as a single feature) (Hawkes and Grainger 2006b). Post-holes associated with pitched roof structures were found in association with the graves of nine individuals (4.0%), while marker post holes were found in association with the graves of 11 individuals (4.9%).

It has been suggested that many of the graves were covered with barrow mounds (Brugmann 2006), evidence for which can be observed in the form of ditches or gullies around the graves of 12 individuals (5.4%). Six of the nine marker post holes mentioned above were found in association with the causeways of the ring ditches surrounding these graves. Actual evidence for mounds covering the graves was found in association with three individuals, and was considered possible for two individuals due to the lack of burials in the land

surrounding each grave, and the spatial distribution of the closest burials (Hawkes and Grainger 2006b). Barrow mounds (as evidenced by ring-ditches) were found in association with non-adults and adults, and were more common in the graves of female than males (Appendix 2: Section 4).

Finally, both flint and chalk were found in some burials. Flint was included in the graves of seven individuals (3.1%). Four of these graves included flint as packing around a coffin. The final three had large flints placed in the grave with them: FS-65 had flints to the left side of the upper body, FS-86 was laid on flint and chalk rubble and had flint to the right of the skull, and FS-116 was buried with large flints to the right of the upper body and to the left of the feet.

7.5.1.3 Multiple burial

Of the 208 individuals (excluding graves which contained no skeletal remains), 21 (10.1% of burial population) were involved in ten multiple burials. There were three contemporary horizontal burials: one of these contained an adult male and female, and the other two contained an adult and a non-adult. Two graves consisted of one individual buried on top of the other without disturbance of the primary burial. It is unclear in both cases if these individuals were buried at the same time or if the secondary individual was buried at a later date without disturbing the primary occupant. Another grave contained a secondary burial on top of a coffined primary burial, but as only the foot end survived, it was not possible to tell if the primary burial was disturbed. Three graves appear to have been re-used, with disarticulation and displacement of the primary inhabitant and insertion of the secondary individual. A final multiple burial was not possible to classify due to post-mortem disturbance, but contained the remains of at least three adult individuals.

7.5.1.4 Grave goods

Table 7.16 provides a summary of the grave good types and frequencies at Finglesham. It should be noted that there were some disturbed burials which were not associated with any small finds at the time of excavation, but may have had grave goods at the time of burial. Therefore, it is possible that the percentage of individuals buried without grave goods is slightly increased.

Table 7.16- Grave good types and frequencies for the Finglesham cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	74	33.2
Weaponry			
Spear	24	24	10.8
Seax	4	4	1.8
Baldric	4	4	1.8
Shield	4	4	1.8
Sword	2	2	0.9
Scabbard	2	2	0.9
Dress accessories			
Belt buckle/mount	65	62	27.8
Beads	411	38	17.0
Pin	25	22	9.9
Pendant	25	12	5.4
Shoe fittings	10	10	4.5
Brooch	9	5	2.2
Bracelet	3	3	1.3
Finger ring	1	1	0.4
Copper/garnet stud	1	1	0.4
Bracteate	1	1	0.4
Pin beater	2	2	0.9
Tools and personal equipment			
Knife	114	109	48.9
Chatelaine	16	16	7.2
Awl	12	9	4.0
Steel	9	9	4.0
Key	12	9	4.0
Iron tool	7	7	3.1
Spindle whorl	6	5	2.2
Shears	5	5	2.2
Comb	4	4	1.8
Nail cleaner	1	1	0.4
Spoon	1	1	0.4
Tweezers	1	1	0.4
Chisel	1	1	0.4
Weaving batten	1	1	0.4
Vessels and containers			
Ceramic vessel	27	26	11.7
Small vessel (box/pouch/purse/bag)	17	16	7.2
Wooden box	14	14	6.3
Organic vessel	10	10	4.5
Glass vessel	6	6	2.7
Metal bowl	2	2	0.9
Drinking vessel	2	2	0.9
Copper workbox	1	1	0.4
Wooden casket	1	1	0.4
Wooden bucket	1	1	0.4
Wooden ?platter	1	1	0.4
Wooden vessel	1	1	0.4

Grave good (cont'd)	# in cemetery	# of graves	% of all graves
Other			
Disc	51	5	2.2
Organic object	5	5	2.2
Wooden object	6	5	2.2
Coffin fittings	5	5	2.2
Animal remains	3	3	1.3
Pyrite irons	2	2	0.9
Coins	10	2	0.9
Padlock	1	1	0.4
Ornament	1	1	0.4
Charcoal	1	1	0.4
Glass fragments	3	3	1.3
Seed covering	1	1	0.4

7.5.2 Palaeopathological analysis

One individual was identified as potentially physically impaired (0.4% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.17. Refer to Appendix 3: Section 5.2 for a detailed differential diagnosis for this individual.

Table 7.17- Summary of the palaeopathological analysis of the individual with physical impairment from Finglesham.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
FS-94	MA	M	- Medial + posterior angulation of distal ends of L radius + ulna - Smooth bony ankylosis of these two bones through the proximal 1/3 of the shaft - Slight atrophy of L humerus	- **Traumatic injury**	- Pronation fixation→ difficulty performing everyday tasks - Visually distinctive abnormal upper limb movement	Convincing; acquired (med-long)	Figure 7.38

NB: differential diagnosis in **bold** is considered the most likely.

Figure 7.38- Fracture and ankylosis at the proximal end of the left radius and ulna of FS-94 with medial angulation of the distal ends. Produced with kind permission of The Duckworth Laboratory.

7.5.3 Funerary treatment of the individual with physical impairment

The average grave dimensions for the adult burial population and the dimensions of the grave of the adult individual with physical impairment are provided in Table 7.18.

Table 7.18- Grave dimensions for the entire adult burial population and for the adult individual with physical impairment at Finglesham.

	Length (m)	Width head end (m)	Width foot end (m)
Site average	2.20	0.72	0.71
Standard deviation	0.27	0.18	0.17
FS-94	2.40	0.86	0.77

The excavators were able to open the entire cemetery site which allowed them to firmly establish the boundaries. The cemetery appeared to be bounded on the western edge by a road now called Whiteway (Brugmann 2006). Excavators dug trenches to the west of this road to determine if the cemetery extended beyond it, but found no further burials (Brugmann 2006). This has been proposed to indicate that the road was at least of an EAS date, or that it was built after the cemetery but avoided the burials out of respect for the dead, or because it would have been more difficult to dig through the remains of the mounds that probably covered some of the burials (Brugmann 2006). FS-94 was buried on the western boundary of the cemetery (Figure 7.39) without grave goods.

Table 7.19 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individual with physical impairment.

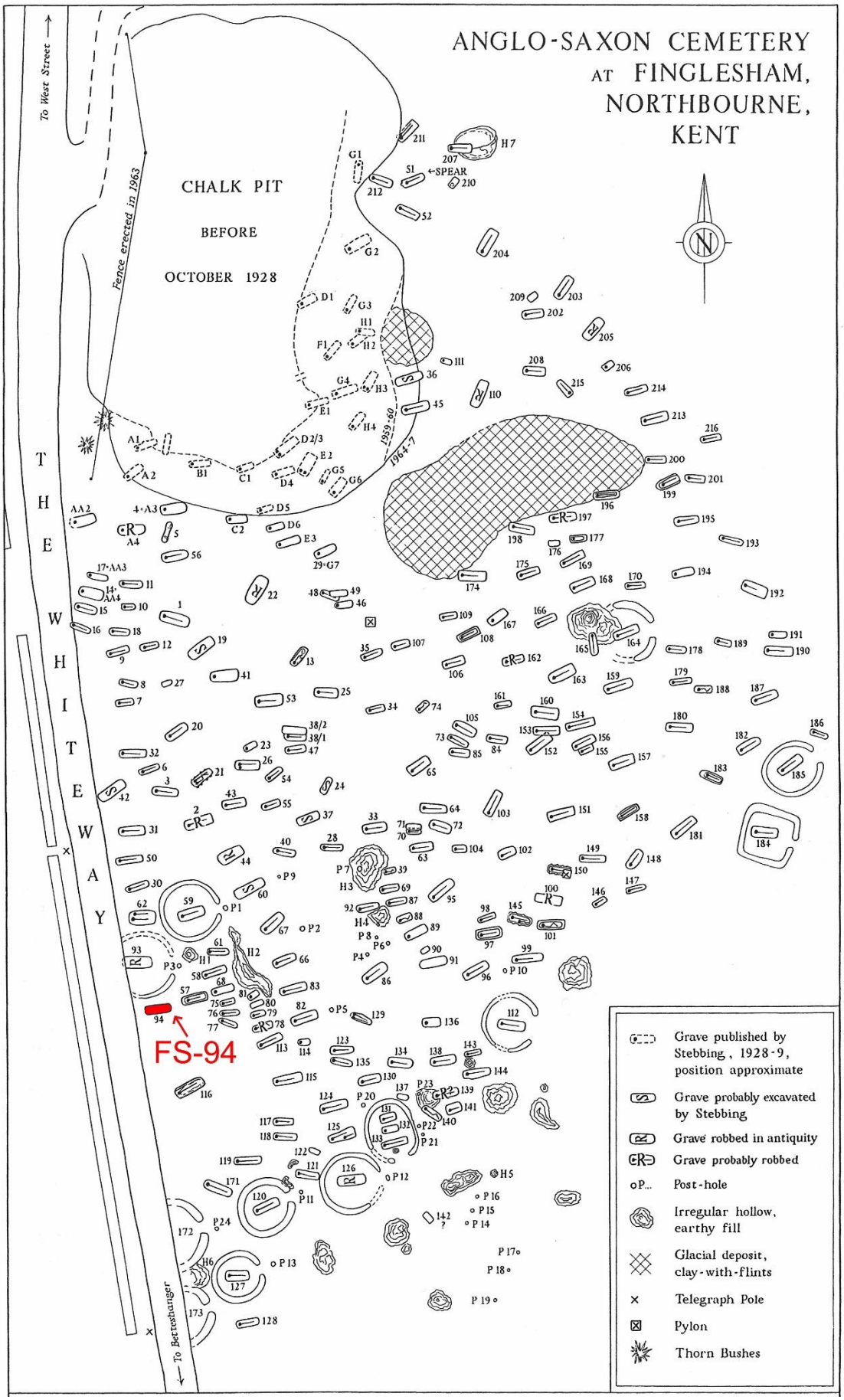

Figure 7.39- Map of the Finglesham cemetery demonstrating the location of the individual with physical impairment (in red). Source: Brugmann (2006: 29), and modified by current author.

Table 7.19- Comparison of the funerary treatment of the individual with physical impairment with the funerary treatment of the entire burial population at Finglesham.

Variable	N	Type	n	% of pop	FS-94
Grave orientation	223	WSW-ENE	148	66.4	WSW-ENE
		WNW-ESE	58	26.0	
		SSW-NNE	**15**	**6.7**	
		NNW-SSE	**1**	**0.4**	
		SSE-NNW	**1**	**0.4**	
Body orientation	147	Supine	135	91.8	Supine
		R side	**7**	**4.8**	
		L side	**4**	**2.7**	
		Prone	**1**	**0.7**	
Body position	158	Extended	148	93.7	Extended
		Flexed	**7**	**4.4**	
		Crouched	**3**	**1.9**	
Head position	98	Forward facing	45	45.9	R facing
		R facing	27	27.6	
		L facing	18	18.4	
		Upright facing	**6**	**6.1**	
		Other	**2**	**2.0**	
Arm position	110	Extended	50	45.5	Extended
		Both bent	24	21.8	
		R straight, L bent	20	18.2	
		R bent, L straight	16	14.5	
Leg position	154	Extended	138	89.6	Extended
		Bent L	**7**	**4.5**	
		Bent R	**4**	**2.6**	
		R straight, L bent	**3**	**1.9**	
		R bent, L straight	**1**	**0.6**	
		Both bent inwards	**1**	**0.6**	
Wooden furniture	223	Absent	137	61.4	Present
		Present	86	38.6	
Coffin	223	Absent	160	71.7	Present
		Possible/present	63	28.2	
Horizontal board	223	Absent	203	91.0	Absent
		Possible/present	**20**	**8.9**	
Side boards	223	Absent	221	99.1	Absent
		Present	**2**	**0.9**	
Under board	223	Absent	222	99.6	Absent
		Present	**1**	**0.4**	
Flint	223	Absent	216	96.9	Absent
		Present	**7**	**3.1**	
Post hole	223	Absent	214	96.0	Absent
		Possible/present	**9**	**4.0**	
Marker post	223	Absent	212	95.1	Absent
		Possible/present	**11**	**4.9**	

Variable (cont'd)	N	Type	n	% of pop	FS-94
Ditch	223	Absent	212	95.1	Absent
		Present	**12**	**5.4**	
Mound	223	Absent	217	97.8	Absent
		Possible/present	**5**	**2.2**	
Chalk	223	Absent	220	98.7	Absent
		Possible/present	**3**	**1.3**	
Multiple burial	208	Single burial	187	89.9	Single
		Vertical (disturbed)	**6**	**2.9**	
		Contemporary horizontal	**6**	**2.9**	
		Unclear	**5**	**2.4**	
		Vertical (not disturbed)	**4**	**1.9**	
Grave goods	225	Other	85	38.1	None
		None	74	33.2	
		Jewellery	40	17.9	
		Weapons	26	11.2	

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population.

7.5.4 Interpretations

7.5.4.1 Finglesham 94

The grave drawing for the individual with physical impairment is provided in Figure 7.40.

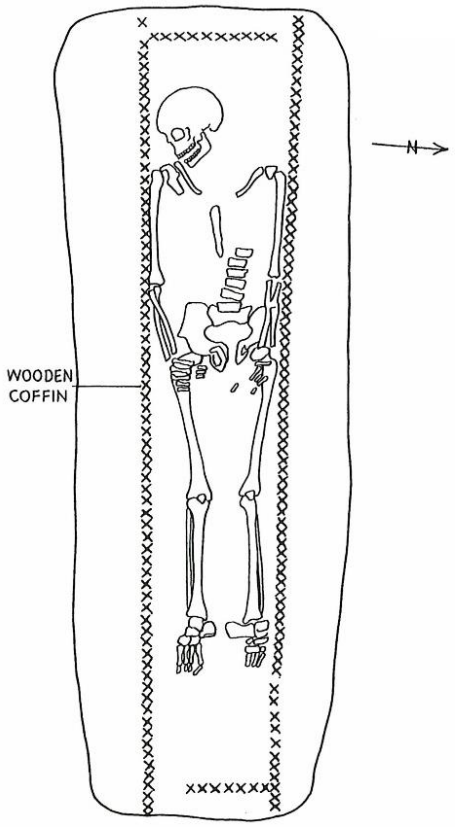

Figure 7.40- Grave plan for physically impaired individual FS-94. Source: Hawkes and Grainger (2006b: 185). © Oxford University School of Archaeology.

FS-94 (middle adult male) experienced a traumatic injury and pronation fixation of the left forearm which probably caused difficulties with some activities and restricted upper limb dexterity (Simmons et al. 1983). FS-94 was not afforded any non-normative mortuary treatment, as he was buried WSW-ENE (66.4%), in a supine (91.8%) orientation, extended (93.7%) position, with the arms and legs extended (45.5%, 89.6%). FS-94 was buried with a wooden coffin (28.2%) without grave goods (30.2%). Hawkes and Grainger (2006b) note that the coffin seems too long for the individual and suggest that there was an organic object buried at this individual's feet, as was seen in many other graves in this cemetery.

FS-94 was buried on the western margin of the cemetery, which was identified by trial trenches on the western side of the Whiteway, which now bounds the cemetery (Brugmann 2006). Although FS-94 was in a marginal location, he was buried directly adjacent to a ring ditch surrounding FS-93 (unsexed middle adult). The presence of a ring ditch suggests that FS-93's grave was covered by a barrow mound. Williams (1998) argues that EAS burial mounds may be emulating (on a much smaller scale) the ancient burial mounds commonly re-used in this period. As mentioned in Section 3.2.1, association of EAS cemeteries with ancient monuments was probably a way for communities to draw symbolic connections with the past, to validate their claim to an area of land, and to emphasise regional or local identities (Williams 1998). It is possible that the association of individual burials with smaller barrow mounds resembling the larger ancient monuments that populated the landscape at the time had similar implications, but on a more communal scale. A barrow mound would have high visibility in the cemetery landscape, suggesting that it was meant to remind the community of the person's passing each time they visited the cemetery, thus lengthening the time that this individual occupied social memory. In addition, the construction of a burial mound would have required an increased amount of effort, so it therefore seems likely that individuals who were buried under barrow mounds were of social importance within their community.

Although FS-94 did not receive a barrow mound himself, the fact that he was immediately adjacent to the barrow mound of FS-93 indicates that his family or community wished to associate him with a person of high social standing by burial proximity. The idea that the area surrounding FS-93 was considered highly desirable by the Finglesham community is supported by the fact that there are

two dense, parallel NW-SE rows of burials immediately to the east of it. Interestingly, these two rows consist solely of females and non-adults. The only other male buried adjacent to the ring ditch around FS-93 (besides FS-94) is FS-62A (young adult male), who was interred in a multiple burial with FS-66B (young adult female) (Figure 7.41). There is a further NW-SE row of burials parallel to and east of the first two which consists of only males.

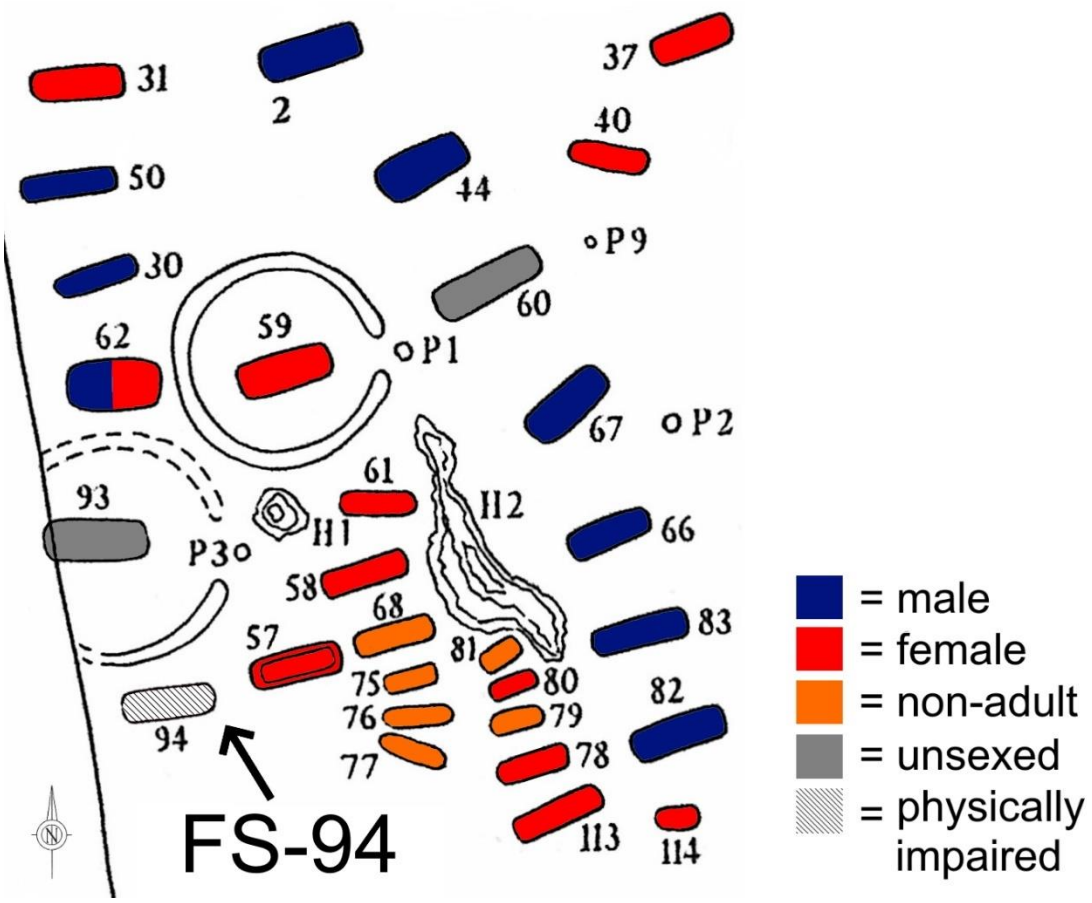

Figure 7.41- Area surrounding FS-94 in the Finglesham cemetery. Source: Brugmann (2006: 29), and modified by current author. © Oxford University School of Archaeology.

The location of FS-94, an adult male with physical impairment, in an area reserved for the burial of females and non-adults is interesting. It should be noted, however, that FS-94's physical impairment may not have been particularly severe: he probably had trouble performing some activities with his left arm and might have been visually distinctive if his arm movements were obviously abnormal. The inability to fully use the left arm may have restricted FS-94 in terms of full social and economic participation, and for this reason, he may have been perceived as vulnerable or less powerful in his community. This might explain why he was included in an area of the cemetery reserved for females and

children, who may have similarly occupied less powerful social roles (Mui 2018) (Section 10.3.3). The females, non-adults, and FS-94 may have been buried in association with individuals of higher social or political status (e.g. FS-93 and FS-59 under barrow mounds) to enhance the identity projected by their mortuary treatment, to confer on them a social identity that was not available to them in life, or perhaps to protect them in death through their adjacency and association with powerful individuals. It might be argued that the placement of FS-94 in an area with a large number of non-adults suggests that he occupied a child-like status in life. However, it seems unlikely that restricted use of one arm had a severe enough impact on FS-94's life to ascribe to him a child's status, unless there were further impairments that were not visible osteologically.

7.5.4.2 Summary

In summary, the burial of FS-94 with normative funerary treatment in a coffin and in association with a burial mound that may have been symbolic of elevated social or political importance, suggests that the individuals burying FS-94 were certainly concerned with the nature of his treatment in death. The association with the mound may have reflected his own social importance, despite his functional restrictions. Or perhaps FS-94's physical impairment diminished his social and economic participation, resulting in him being grouped with potentially less powerful non-adults and women, who were buried in association with a feature that may have symbolised their post-mortem protection.

It should be noted that, due to severe erosion of the cortical surface of most of the bones in this collection and the incompleteness of many individuals, it is likely that cases of physical impairment at Finglesham were missed. Thus, it is possible that the individuals who lived with physical impairment in life but were not identified osteologically were among those individuals who were afforded non-normative treatment. Despite this, it is noteworthy that the one individual with physical impairment who could be identified was afforded a visible burial adjacent to a barrow mound that was probably symbolic of high social standing.

7.6 Norton East Mill

7.6.1 General funerary treatment

The funerary treatment variables which were recorded for the Norton East Mill cemetery (6th to early 7th centuries) based on information provided by Sherlock and Welch (1992) and unpublished excavation photographs held by Tees Archaeology (accessed 2017), include grave orientation and location, body orientation and position, head/arm/leg position, and the presence of other individuals (multiple burial) and grave goods. A majority (87.9%) of the graves were oriented generally S-N (SE-NW, SSE-NNW, and SSW-NNE orientations included). Six individuals were oriented N-S or NNW-SSE (7.2%), and four were oriented W-E (4.8%).

7.6.1.1 Body and limb positioning

Unlike most other EAS cemeteries, none of the body orientations or positions constituted a majority, and the flexed (42.3%) and crouched (31.0%) positions were more common than the extended position (26.8%). Prone burial, which tends to be a non-normative funerary rite in EAS cemeteries, was present in 12.7% of the burial population, which is a considerably higher percentage than expected.

Of the 43 individuals who could be assessed for both sex and body orientation/position, only 13 were male. This small sample size makes it more difficult to analyse whether there was an association between sex and specific body orientations or positions. However, all of the nine left side burials were female, and it was more common for males to be buried on the right side (30.8%) than females (15.4%) (Appendix 1: Section 5). It was more common for females to be buried in the crouched position (45.8%) and for males to be buried in the flexed position (61.5%) (Appendix 1: Section 5). Therefore, it appears that there was an association between sex and body orientation/position.

7.6.1.2 Multiple burial

There were six cases of multiple burial involving 14 individuals (11.9% of burial population). There were five contemporaneous horizontal burials

containing two individuals, four of which contained an adult and a non-adult. In two of these, a third individual was buried either on top of or underneath the double burial. The final multiple burial consisted of a prone, crouched, unsexed adult buried on top of a prone, crouched, young adult female. The two burials were probably contemporaneous as the grave fill was uniform (Sherlock and Welch 1992: 184-6).

7.6.1.3 Grave goods

Table 7.20 provides a summary of the grave good types and frequencies at Norton East Mill. According to Sherlock and Welch (1992), there were only three undisturbed graves which did not contain grave goods. The rest of the graves which did not contain grave goods had been disturbed, so it is possible that at the time of burial, they did contain grave goods which are now missing. Therefore, it is possible that the percentage of individuals buried with grave goods is slightly decreased.

Table 7.20- Grave good types and frequencies for the Norton East Mill cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	23	19.8
Weaponry			
Spear	10	10	8.6
Shield	5	5	4.3
Ferrule	3	3	2.6
Seax	1	1	0.9
Dress accessories			
Beads	753	54	46.6
Brooch	78	42	36.2
Buckle	24	24	20.7
Wrist clasp	52	22	19.0
Pin	17	15	12.9
Pendant	24	11	9.5
Spangles	7	4	3.4
Bracelet	2	2	1.7
Tools and personal equipment			
Knife	47	45	38.8
Key/girdle hanger	36	17	14.7
Purse/bag	4	4	3.4
Comb	3	3	2.6
Tweezers	2	2	1.7
Ear scoop	2	2	1.7
?Cosmetic brush	2	2	1.7
Needle	1	1	0.8

Grave good (cont'd)	# in cemetery	# of graves	% of all graves
Vessels and containers			
Ceramic vessel	7	7	56.0
Potsherds	46	11	9.5
Wooden vessel	3	3	2.6
Bucket	1	1	0.9
Other			
Nail	13	8	6.9
?Amulet	2	2	1.7
Flint	2	2	1.7
Cowrie shell	1	1	0.9
Sheep tooth	1	1	0.9
Sea urchin fragments	1	1	0.9
Amber stone	1	1	0.9

7.6.2 Palaeopathological analysis

One individual was identified as potentially physically impaired (0.8% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.21. Refer to Appendix 3: Section 6.2 for a detailed differential diagnosis for this individual.

Table 7.21- Summary of the palaeopathological analysis of the individual with physical impairment from Norton East Mill.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
NEM-91	YA	M	- Posterior + medial bowing of distal half of R femur - Shortening of R femur	- **Traumatic injury**	- Limb length discrepancy + abnormal angle of articulation with knee→ abnormal gait + restricted use of R leg	Convincing; acquired (med-long)	Figure 7.42

NB: differential diagnosis in **bold** is considered the most likely.

Figure 7.42- Shortening and medial angulation of the right femur of NEM-91 in comparison to left. Produced with kind permission of Tees Archaeology.

7.6.3 Funerary treatment of the individual with physical impairment

The southern and western margins of the cemetery were bounded by pre-Anglo-Saxon ditches which were probably utilised as cemetery boundaries (Sherlock and Welch 1992: 12-3). The eastern margin of the cemetery was bounded by a slope, and the northern margin was bounded by a hollow (Sherlock and Welch 1992: 14). Thus, the limits of the Norton East Mill cemetery were well established (Figure 7.43). NEM-91 was buried towards the southern end of the cemetery surrounded by other burials. There is an ovular north-south oriented area of relatively empty space within which only three burials were included (NEM-61, NEM-103, and NEM-111). This empty space is noted briefly by Sherlock and Welch (1992: 15), and may be related to empty spaces observed in other Anglo-Saxon cemeteries that are potentially associated with communal funerary rites (see Sections 7.7.4.3 and 8.4.4.3).

Table 7.22 provides a summary of the funerary treatment of the entire population and the funerary treatment of the individual with physical impairment.

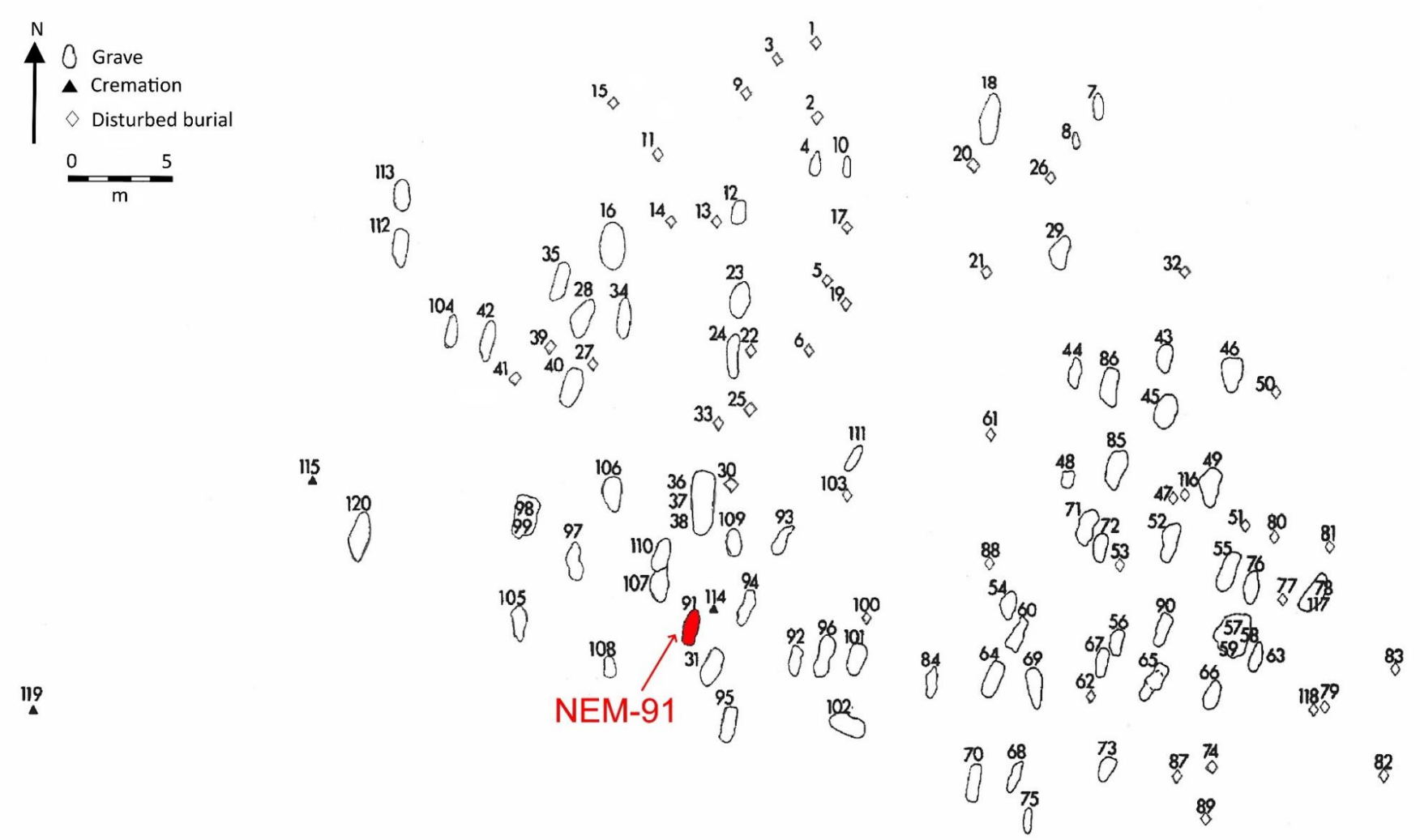

Figure 7.43- Map of the Norton East Mill cemetery demonstrating the location of the individual with physical impairment (in red). Source: Sherlock and Welch (1992: 93), and modified by current author. © Council for British Archaeology and reprinted with kind permission of Stephen Sherlock.

Table 7.22- Comparison of the funerary treatment of the individual with physical impairment with the funerary treatment of the entire burial population at Norton East Mill.

Variable	N	Type	n	% of pop	NEM-91
Grave orientation	83	S-N	27	32.5	SSE-NNW
		SE-NW	12	14.5	
		SSE-NNW	31	37.3	
		SSW-NNE	**3**	**3.6**	
		N-S	**3**	**3.6**	
		NNW-SSE	**3**	**3.6**	
		W-E	**4**	**4.8**	
Body orientation	79	Supine	36	45.6	Prone
		L side	17	21.5	
		R side	16	20.3	
		Prone	10	12.7	
Body position	71	Flexed	30	42.3	Extended
		Crouched	22	31.0	
		Extended	19	26.8	
Head position	60	L facing	22	36.7	R facing
		R facing	19	31.7	
		Forward facing	11	18.3	
		Upright facing	7	11.7	
		Downward facing	**1**	**1.7**	
Arm position	55	Both bent	31	56.4	Both bent
		Extended	8	14.5	
		R straight, L bent	8	14.5	
		R bent, L straight	8	14.5	
Leg position	73	Bent R	31	42.5	R straight, L bent
		Bent L	21	28.8	
		Extended	17	23.3	
		R straight, L bent	**2**	**2.7**	
		Other	**2**	**2.7**	
Multiple burial	118	Single	104	88.1	Single
		Contemporary horizontal	**6**	**5.1**	
		Contemporary horizontal + vertical sequential	**6**	**5.1**	
		Contemporary vertical	**2**	**1.7**	
Grave goods	118	Jewellery	56	48.3	None
		Other	27	23.3	
		None	23	19.8	
		Weapons	**10**	**8.6**	

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population.

7.6.4 Interpretations

Before the funerary treatment of NEM-91 can be considered, several interesting and unusual burial types at Norton East Mill must be discussed. Mortuary treatment at this cemetery was markedly different from the mortuary treatment at the other EAS cemeteries analysed, and the process to identify non-normative funerary rites was more complicated (Table 7.23).

Table 7.23- Descriptions of the unusual burial types at Norton East Mill cemetery. Source: Sherlock and Welch (1992).

Ind. no.	Age/sex	Description	Grave goods
NEM-17	MA, M	Prone, extended	Iron buckle
NEM-25	YA, M	Prone, flexed	Spearhead, potsherds (x2)
NEM-28	ADO, ?F	Prone, ?crouched, lower legs resting vertically on side of grave cut	Beads (x11), knife, key set, pin, brooch (x2)
NEM-35	YA, F	R side, flexed, skull face down on R elbow with R forearm projecting vertically (Figure 7.44)	Beads (x12), key set, buckle, brooch (x2), wrist clasps (x3), bucket pendants (x9), pin, copper edging (?bag)
NEM-47	Adult, F	Prone, extended, oriented W-E	None, but buried with NEM-116 (non-adult)
NEM-71	ADO, US	Prone, flexed	Beads (x6), bucket pendant (x4)
NEM-84	MA, US	Prone, flexed, oriented NNW-SSE, capped with 4 cm thick clay layer which may have been part of a mound	Bead, iron ring, knife, knife sheath mounts (x5), copper cruciform brooch, copper annular brooch, copper wrist clasps (x2)
NEM-91*	YA, M	Prone, extended with L leg flexed, R elbow projecting vertically out of grave (Figure 7.45)	None
NEM-94	MA, ?F	Torso turned to L with extended legs, L elbow raised slightly out of grave with R hand resting on top of it (Figure 7.44)	Beads (x26), knife, annular brooch (x3), copper wrist clasp, bucket pendant, sheep tooth
NEM-98	Adult, US	Prone, crouched, buried on top of NEM-99	Annular brooch, bucket pendant
NEM-99	YA, F	Prone, all limbs projecting vertically out of grave, buried below NEM-98, careless treatment? (Figure 7.44)	Comb, potsherd
NEM-111	Adult, US	Prone, flexed	Iron knife
NEM-120	MA, M	Supine, ?flexed, L leg bent vertically out of grave (Figure 7.44)	Iron bar, knife, spearhead, wooden bucket

NB: *= physically impaired.

*Figure 7.44- Unusual burials at Norton East Mill cemetery. **A**: NEM-35; **B**: NEM-94; **C**: NEM-99; **D**: NEM-120. Source: Unpublished archive held by Tees Archaeology. © Tees Archaeology.*

As discussed in Section 7.4.4.3, although it is tempting to interpret prone burial in a negative context, there is a high degree of variability in terms of who was afforded a prone burial within and between EAS cemeteries, and it is therefore likely that prone burial had different meanings in different communities (Reynolds 2009: 75). This is abundantly clear when comparing Norton East Mill with the other EAS cemeteries analysed in this research (Table 7.24).

Table 7.24- Comparisons between the frequencies of prone, flexed, and crouched burials at all nine EAS cemeteries analysed.

EAS cemetery	% prone	% flexed	% crouched
Apple Down	0.9	16.8	7.1
Butler's Field	1.6	32.4	4.3
Edix Hill	2.1	25.6	1.2
Finglesham	0.7	4.4	1.9
Norton East Mill	**12.7**	**42.3**	**31.0**
St. Anne's Hill	0.0	10.9	1.4
Watchfield	3.8	12.5	4.2
Windmill Hill	3.6	31.0	17.2
Worthy Park	2.4	12.0	3.6

In most cemeteries, prone burial was characterised as a non-normative funerary treatment due to its infrequency. However, at Norton East Mill this funerary rite was afforded to 12.7% of the population: while it was not extremely common, it certainly was not rare. It seems unlikely that 12.7% of the population was afforded a burial ritual that was meant to have negative connotations or to convey deviancy. In addition, the fact that extended burial (26.8%) was less frequent than flexed (42.3%) or crouched (31.0%) burial, indicates that body position in the Norton East Mill community was used differently than it was in other EAS communities. It has been established that body positioning was used in EAS contexts to reflect various aspects of self and social identity (Pader 1982; Lucy 1998; Williams-Ward 2017; Mui 2018), and the variety observed in body positioning within and between EAS cemeteries suggests that different communities utilised body positioning to communicate different aspects of identity. Thus, due to the special nature of body orientation and position distribution in the Norton East Mill cemetery, it is inappropriate to assign a non-normative or deviant status to the prone burials (including NEM-91) for this particular cemetery.

Figure 7.45- In situ photograph of NEM-91 who had evidence of skeletal physical impairment. Note the vertically projecting right elbow. Source: Unpublished archive held by Tees Archaeology. © Tees Archaeology.

NEM-91 (young adult male) experienced a fracture of the right femur which caused shortening of the bone and probably resulted in an abnormal gait that may have restricted normal participation. NEM-91 was buried prone (12.7%) with the right leg straight and the left leg bent, which occurred in only one other individual in the cemetery (2.7%) (Figure 7.45). It is possible that, because the right leg was considerably shorter than the left, those burying NEM-91 were required to bend the left leg to properly fit the whole corpse into the grave. While a majority of the population (56.4%) was buried with both arms bent, the position of NEM-91's right arm, which was propped up vertically out of the grave, was

unique in this cemetery. However, as mentioned above, there were other skeletons that had vertically projecting limbs (see Table 7.23), so this treatment is not entirely unexpected at Norton East Mill. The arm positioning observed for NEM-91 suggests that his body was not treated hastily, but was carefully arranged, as the folding of the left arm under the body and the vertically projecting right elbow would not occur naturally if the body had been thrown in carelessly.

Analysis of grave depth should be treated cautiously, as the original Anglo-Saxon ground surface may not have been level, and, over time, natural and man-made processes will have altered the topography of the cemetery (Reynolds 2009: 67-8). However, Sherlock and Welch (1992: 22) identified a potential correlation between depth and the number of grave goods included in a burial. This might suggest that the more effort/time was spent on the construction of a grave, the more likely the individual was to be buried with a rich grave good assemblage (which might be related to social or financial status). However, it is possible that some negative motivations may have required deeper graves (e.g. a deeper grave might keep the living safe from a deceased, deviant individual), and a larger number of grave goods is not always a direct indication of an individual's wealth in life (Section 3.2.6.1).

However, it is interesting that NEM-91 was buried in the sixth deepest grave at Norton East Mill and was not accompanied by grave goods. Sherlock and Welch (1992: 26) suggest that the lack of grave goods in association with NEM-91 indicates that the individual was buried either naked or in a shroud, but whether this treatment had negative connotations is difficult to determine. As NEM-91 was buried without grave goods, the depth of his grave cannot be explained as an attempt to protect the grave from looters. The motivations for deep burial are various and inherently obscure, but it is possible that NEM-91 was buried in such a deep grave to keep his corpse safe from animal activity, or perhaps, if he was considered socially deviant, to keep the surviving community members safe from him, even in death.

NEM-91 experienced both visual distinctiveness (shortened and angled left leg and abnormal gait) and functional restriction, both of which may have influenced community attitudes towards him in life. It is possible that NEM-91 was more vulnerable to negative opinions because he looked different, or because he was not able to participate fully in social and economic activities typical of an

Anglo-Saxon male. These social opinions may have influenced his burial treatment and required that he be buried in a deep grave in the prone orientation without grave goods.

It is unlikely that NEM-91 was the only individual with physical impairment in such a large population, but poor preservation precluded the identification of other individuals with physical impairment. Thus, it is difficult to draw many concrete conclusions about how individuals with physical impairment were treated in death and life at Norton East Mill. Although many of the individuals who received non-normative burial treatment were poorly preserved, none of them, besides NEM-91, exhibited any evidence of skeletal physical impairment. This indicates that physical impairment was certainly not the only factor that necessitated non-normative or prone burial. However, because NEM-91 was physically impaired and afforded non-normative burial treatment, physical impairment as a predictor of such treatment must remain a possibility.

7.7 St. Anne's Hill

7.7.1 General funerary treatment

The funerary treatment variables which were recorded for the St. Anne's Hill cemetery (5th to 7th centuries) based on information provided in Doherty and Greatorex (2016) include grave orientation and location, body orientation and position, head/arm/leg position, and the presence of stones, other individuals (multiple burial), and grave goods.

7.7.1.1 Grave orientation

The specific grave orientations were not provided for each individual, but the grave plans for each individual were included with a North arrow. From these grave plans, Harrington (2016b) concluded that a majority of the graves (69.6%) were oriented either S-N or SW-NE, while W-E orientation was also relatively frequent (27.3%). Graves oriented NW-SE (2.1%) and E-W (1.1%) are considered non-normative.

7.7.1.2 Body and limb positioning

A large majority of the individuals were buried supine (94.4%) and extended (85.0%). Burial in the flexed position was relatively rare (10.9%), while burial in the right (3.5%) and left side (2.1%) orientations, and in the crouched position (1.4%) is considered non-normative. All females were buried in the supine orientation, while two males were buried on the right/left side (Appendix 2: Section 6). It was more frequent for non-adults to be buried on the right side and in the flexed or crouched positions than adults (Appendix 2: Section 6).

7.7.1.3 Structures and furniture

No evidence of coffins was found, however two individuals (1.0%) were probably buried wrapped in shrouds as evidenced by the “cramped, almost crushed arrangement of bones indicative of binding” (Greatorex 2016b: 43).

Nine graves were associated with stones (4.7%). Graves 213 and 250 were covered by layers of rocks, which are interpreted as raised tumuli or cairns, and it is believed that the Upper Greensand partially constituting these rock layers was from a destroyed Romano-British building that once stood in the area (Greatorex 2016b). Six Upper Greensand blocks were also used to cover the non-adult skeleton in Grave 721, but as they were buried under the ground level, they could not have functioned as grave markers (Greatorex 2016b). Six other graves contained various types of stones generally located around the edges of the graves, but whether they functioned as grave linings or stabilisers is unclear (Greatorex 2016b).

7.7.1.4 Multiple burial

Twenty-two individuals (11.5% of burial population) were included in 11 multiple burials. There were only two instances of contemporary horizontal burial in a grave that was dug wide enough for two individuals: Grave 250 contained two older children with their arms touching, while Grave 333/344 contained a young adult and a younger child. The remaining nine instances of multiple burial consisted of vertical superimposed burials, but there is no discussion as to whether these burials were contemporary or consecutive. Of these nine graves, four contained an adult and a non-adult. Grave 195, which contained a younger

child, was deliberately covered with chalk, and the much larger Grave 150 of an adult female was buried on top of it. Grave 1018 consisted of a younger child who was buried with their skull on top of the pelvis of a young adult male, although there is no reference as to whether this was considered contemporary or consecutive. In Grave 1060, the remains of SAH-1060B appear to have been disarticulated and moved to the side for the insertion of the articulated SAH-1060A.

7.7.1.5 Grave goods

Table 7.25 provides a summary of the grave good types and frequencies at St. Anne's Hill.

Table 7.25- Grave good types and frequencies for the St. Anne's Hill cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	67	34.9
Weaponry			
Spearhead	19	19	9.9
Shield boss	6	6	3.1
Ferrule	5	5	2.6
Sword	3	3	1.6
Francisca	2	2	1.0
Arrowhead	5	1	0.5
Seax	1	1	0.5
Dress accessories			
Buckle	47	47	24.5
Beads	646	29	15.1
Brooch	30	16	8.3
Pin	14	14	7.3
Buckle plate	12	10	5.2
Belt fittings/strap-ends	6	6	3.1
Finger ring	4	4	2.1
Lace end	2	2	1.0
Pendant	2	2	1.0
Gold braid	1	1	0.5

Grave good (cont'd)	# in cemetery	# of graves	% of all graves
Tools and personal equipment			
Knife	84	79	41.1
Girdle group	22	22	11.5
- Suspended from waist in bag/pouch	14	14	7.3
- Iron/copper rings	*c.*14	9	4.7
- Iron roves	8	7	3.6
- Straps with suspension loop	4	4	2.1
- Suspended from shoulder/neck	3	3	1.6
- Firesteel	2	2	1.0
- Other (near upper arm)	1	1	0.5
Keys	30	13	6.8
Tweezers	6	6	3.1
Purse ring	2	2	1.0
Comb	1	1	0.5
Ear scoop	1	1	0.5
Toilet implement	1	1	0.5
Spindle whorl	1	1	0.5
Deer antler knife handle	1	1	0.5
Copper seal box	1	1	0.5
Copper needle	1	1	0.5
Vessels and containers			
Metal vessel	6	6	3.1
Jar	5	5	2.6
Accessory vessel	5	4	2.1
Probable vessel	3	3	1.6
Glass claw beaker	2	2	1.0
Bucket	1	1	0.5
Bucket handle mount	1	1	0.5
Other			
Copper plate	9	5	2.6
Coin	7	5	2.6
Copper disc	6	4	2.1
Iron plate	2	2	1.0
Intaglio	1	1	0.5
Silver wire ring	1	1	0.5
Copper tube	1	1	0.5
Slate hone stone	1	1	0.5
Urn fragments	1	1	0.5
Flint hammerstone	1	1	0.5
Pearl	1	1	0.5
Oyster shell	1	1	0.5
Silver band	1	1	0.5
Glass fragment	1	1	0.5

7.7.2 Palaeopathological analysis

Six individuals were identified as potentially physically impaired (3.1% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.26. Refer to Appendix 3: Section 7.2 for detailed differential diagnoses for each individual.

Table 7.26- Summary of the palaeopathological analysis of the individuals with physical impairment from St. Anne's Hill.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
SAH-111	MA	M	- Absence of distal ends of L ulna + radius - Ankylosis of the distal ends of L ulna + radius= evidence of healing	- Non-union fracture - **Amputation**	- Absence of L hand→ restricted use of L upper limb - Fixation of L forearm in partial pronation	Convincing; acquired (med-long)	Figure 7.46
SAH-309	MA	M	- Fusion of L carpals into one mass + fusion of L MC1 to trapezium (not examined by current author) - Thinning of distal shaft of R ulna	- Joint diseases - **PsA** - **RA** - **Septic arthritis** - **Traumatic injury**	- Possible stiffness + limited range of motion of wrist	Possible; acquired (med-long)	Figure 7.47
SAH-346	Adult	M??	- Enlargement of L acetabulum - Contour change of L femoral head - Midshaft swelling of L femur	- Fracture - ABC - Enchondroma - Non-ossifying fibroma - **Osteoid osteoma** - **Osteoblastoma** - **Simple bone cyst** - **Primary or secondary osteoarthritis (hip)**	- Possible pain mid femur - Possible abnormal gait leading to secondary OA of L hip	Possible; acquired (med-long)	Figure 7.48

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
SAH-481	Adult	M	- Flattening of inferior margin of nasal aperture + rounding of lateral margins - Some resorption of anterior nasal spine - Porous new bone deposition on R + L MCs - Distal resorption of three manual proximal phalanges + one distal phalanx - PNB formation on fragments of tibiae + fibulae	- Cranium: treponemal disease, **leprosy** - Post-cranial: osteomyelitis, treponemal disease, HOA, non-specific infection/inflammation, **leprosy**	- Rhinomaxillary syndrome→ nasal discharge, clogged airway, lips/tongue/palate nodules, + saddle-nose deformity - Hand deformity→ restricted use - Pain, loss of sensation in extremities, + probable infection of foot via plantar ulcer→ ?abnormal gait - Possible: skin lesions, hair loss, lagophthalmos, + blindness	Convincing; acquired (med-long)	Figure 7.49-Figure 7.50
SAH-744	YA	US	- Swelling midshaft of L tibia - Diffuse, well-integrated compact bone deposition across L tibial shaft - Areas of cavitation which do not perforate medullary cavity - Occlusion of medullary cavity	- Leprosy - HOA - Treponemal disease - Osteomyelitis - **Non-specific inflammation/infection**	- Longstanding inflammation of periosteum→ swelling, redness, pain, + loss of function - Possible infection but no longer active	Possible; acquired (med-long)	Figure 7.51

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
SAH-1049	YA	M??	- Collapse + kyphosis of thoracic vertebrae	- Osteomyelitis - Brucellosis - **Tuberculosis**	- Gibbus deformity - Disruption of spinal cord→ paraparesis/paraplegia, urinary/anal incontinence, pain, sensory impairment, + abnormal gait - General symptoms: weakness, fatigue, weight loss, fever, etc.	Convincing; acquired (med-long)	Figure 7.52

NB: differential diagnoses in **bold** are considered the most likely.

Figure 7.46- Absence of the distal ends of the left radius and ulna of SAH-111 with evidence of healing indicative of amputation. Produced with kind permission of Eastbourne Borough Council.

Figure 7.47- Noticeable thinning of the distal shaft of the right ulna of SAH-309 with possible lateral displacement. Produced with kind permission of Eastbourne Borough Council.

Figure 7.48- Anterior and medial swelling of the midshaft of the left femur of SAH-346. Produced with kind permission of Eastbourne Borough Council.

Figure 7.49- Flattening of the inferior margins of the nasal aperture of SAH-481. Produced with kind permission of Eastbourne Borough Council.

Figure 7.50- Distal resorption of two right manual phalanges of SAH-481. Produced with kind permission of Eastbourne Borough Council.

Figure 7.51- Non-perforating areas of cavitation on the shaft of the left tibia of SAH-744. Produced with kind permission of Eastbourne Borough Council.

Figure 7.52- Kyphosis of the three thoracic vertebra unit of SAH-1049. Produced with kind permission of Eastbourne Borough Council.

7.7.3 Funerary treatment of the individuals with physical impairment

None of the individuals with physical impairment were buried in graves classified as shallow or deep (Greatorex 2016b). The southern border of the cemetery was firmly established, and due to a thinning out of the burials on the western side, it is possible that the western border was established as well (Greatorex 2016b) (Figure 7.53). The northern and eastern borders remain unexcavated. Of the individuals with physical impairment, only SAH-111 and SAH-744 were buried in the densest part of the cemetery, surrounded by other burials. SAH-1049 was buried on the probable western border of the cemetery in a deliberate row with three other individuals. SAH-309 was buried on the southern border of the cemetery along with several other W-E oriented burials. SAH-346 was surrounded by an area that was undisturbed by burials and was located adjacent to the empty space in the northeast corner of the cemetery, which was potentially associated with community activity (see Section 7.7.4.3). SAH-481 was buried in complete isolation to the southeast of the main cemetery.

Table 7.27 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

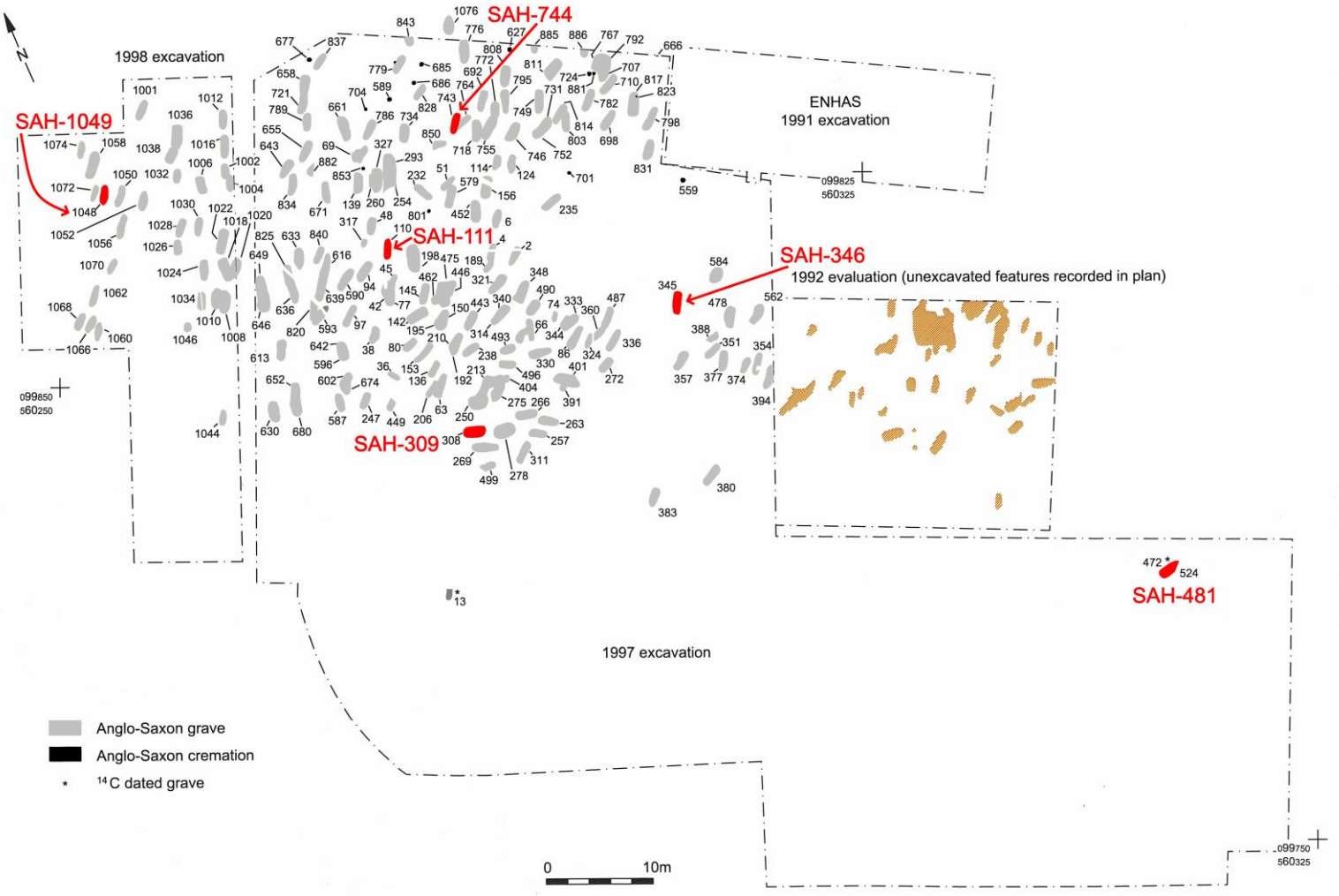

Figure 7.53- Map of the St. Anne's Hill cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Greatorex (2016b: 34), and modified by current author. © UCL Archaeology South-East. NB: numbers in black represent grave context numbers which differ from skeleton context numbers.

Table 7.27- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at St. Anne's Hill.

Variable	N	Type	n	% of pop	SAH-111	SAH-309	SAH-346	SAH-481	SAH-744	SAH-1049
Grave orientation	187	S-N	71	38.0	S-N	W-E	S-N	W-E	S-N	W-E
		SW-NE	59	31.6						
		W-E	51	27.3						
		NW-SE	**4**	**2.1**						
		E-W	**2**	**1.1**						
Body orientation	144	Supine	136	94.4	Supine	Supine	Supine	L side	Supine	Supine
		R side	**5**	**3.5**						
		L side	**3**	**2.1**						
Body position	147	Extended	125	85.0	Extended	Extended	N/A	Other	Extended	Extended
		Flexed	16	10.9						
		Other	**4**	**2.7**						
		Crouched	**2**	**1.4**						
Head position	70	R facing	35	50.0	R facing	N/A	N/A	Forward facing	N/A	L facing
		L facing	23	32.9						
		Forward facing	12	17.1						
Arm position	113	Extended	41	36.3	Extended	Extended	R straight, L arm bent	Both bent	N/A	Both bent
		Both bent	33	29.2						
		R bent, L straight	21	18.6						
		R straight, L bent	18	15.9						

Variable (cont'd)	N	Type	n	% of pop	SAH-111	SAH-309	SAH-346	SAH-481	SAH-744	SAH-1049
Leg position	147	Extended	122	83.0	Extended	Extended	N/A	Bent L	Extended	Extended
		Bent R	15	10.2						
		Bent L	**4**	**2.7**						
		R straight, L bent	**4**	**2.7**						
		R bent, L straight	**1**	**0.7**						
		Both bent outwards	**1**	**0.7**						
Multiple burial	192	Single	172	88.5	Single	Single	Single	Single	Single	Single
		Vertical	**18**	**9.4**						
		Contemporary horizontal	**4**	**2.1**						
Shroud	192	Absent	190	99.0	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**2**	**1.0**						
Stone tumulus/cairn	192	Absent	190	99.0	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**2**	**1.0**						
Stone lining	192	Absent	186	96.9	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**6**	**3.1**						
Stone layer	192	Absent	195	99.5	Absent	Absent	Absent	Absent	Absent	Absent
		Present	**1**	**0.5**						
Grave goods	192	Other	68	35.4	Weapon[1]	None	None	Other[2]	Other[3]	None
		None	67	34.9						
		Jewellery	30	15.6						
		Weapons	27	14.1						

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population. Grave goods: **[1]**= Spear (9.9%), knife (41.1%); **[2]**= Copper intaglio (incised peacock decoration, late 4th to 5thC) for a bezel (finger ring) (0.5%); **[3]**= Iron object (possible belt/buckle plate); percentage indicates the % of graves in which these items were found.

7.7.4 Interpretations

The grave drawings and *in situ* photographs (where available) of the individuals with physical impairment are provided in Figure 7.54 and Figure 7.55.

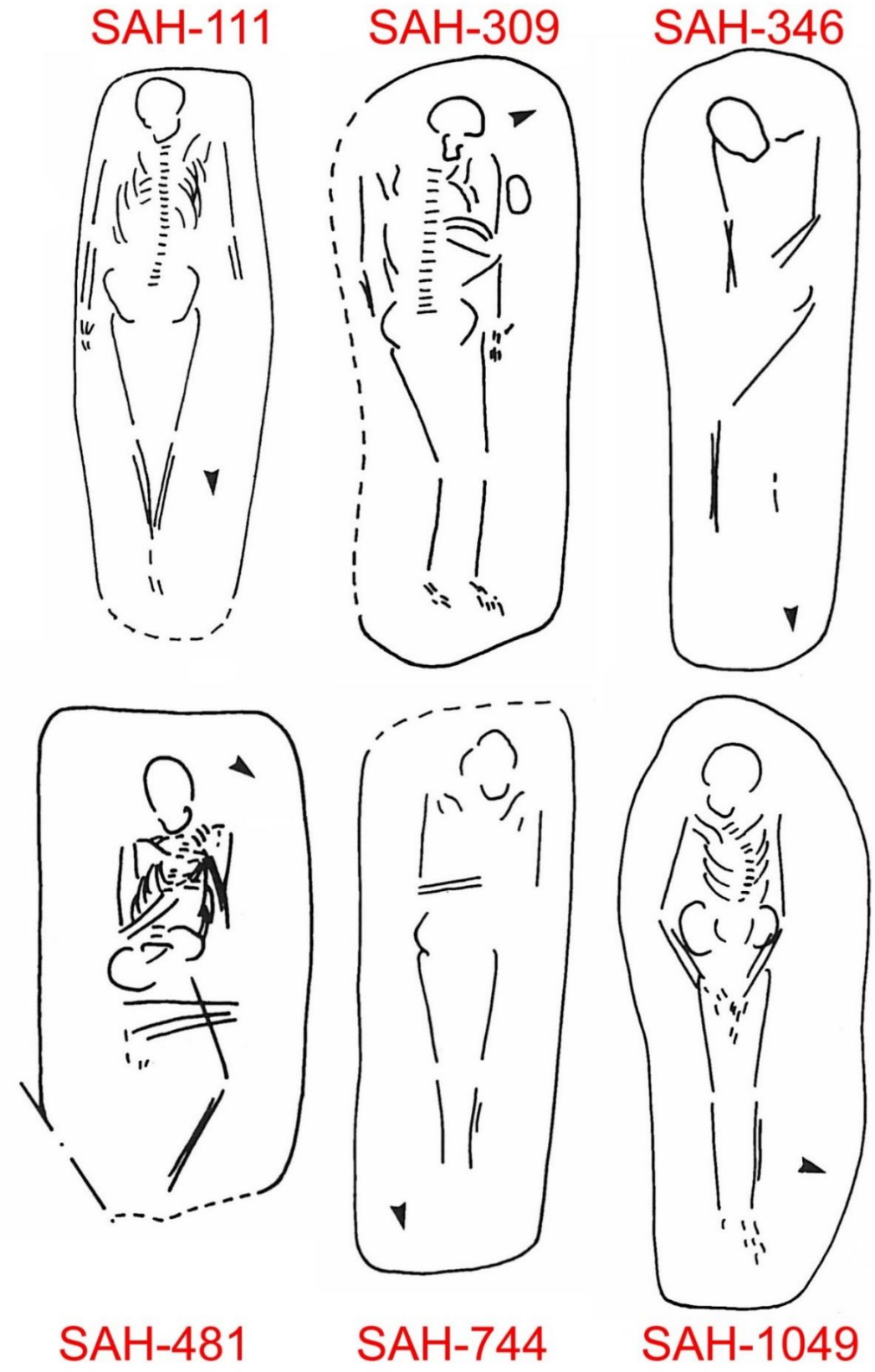

Figure 7.54- Grave drawings for the individuals with physical impairment at St. Anne's Hill. Source: Clifford et al. (2016), and modified by current author. © UCL Archaeology South-East.

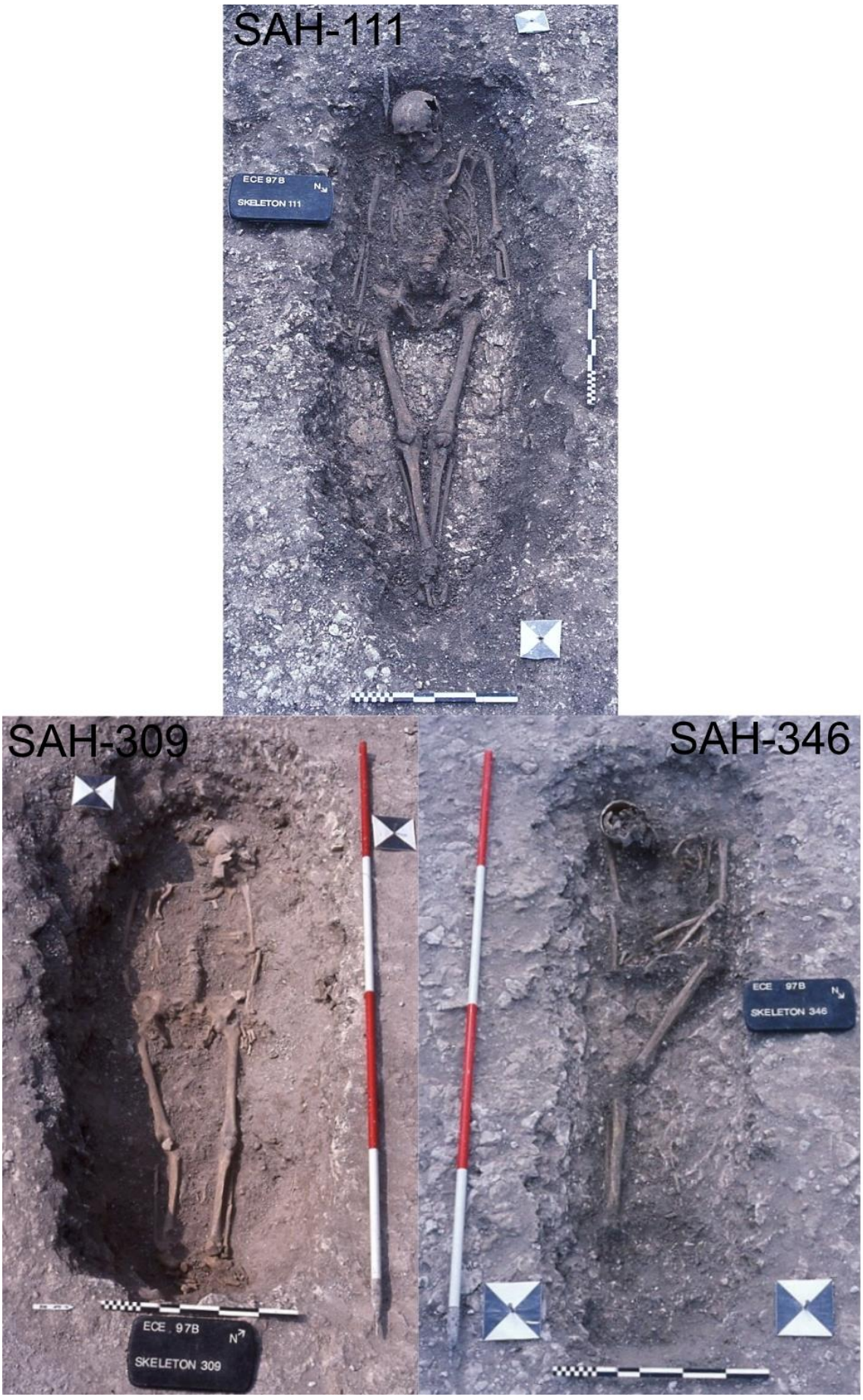

Figure 7.55- In situ excavation photographs for some of the individuals with physical impairment at St. Anne's Hill. Source: Unpublished archive held at Eastbourne Borough Council.

SAH-744 (unsexed young adult, Grave 743) had a non-specific inflammation of the left tibia that probably resulted in swelling and pain (Golding 1985; Amft et al. 2008), and may have restricted normal ambulation. SAH-744 was afforded normative burial treatment in terms of limb positioning, grave good inclusion, and burial location (Figure 7.54). The remainder of the individuals with physical impairment will be discussed below in more detail.

7.7.4.1 St. Anne's Hill 111

SAH-111 (middle adult male, Grave 110) had his left hand amputated in life (with evidence of healing), which would have restricted full use of the left upper limb. SAH-111 was afforded normative burial treatment in terms of body positioning and burial location (Figure 7.54 and Figure 7.55) and was buried with an iron spear (9.9%), a grave good which is commonly found in EAS weapons burials. It is possible that SAH-111 was a warrior for some or most of his life (but see Section 3.2.6.3.1 for other explanations), then lost his hand (potentially in battle), which probably restricted continued participation in a warrior role. It is also possible that SAH-111's left hand was amputated due to an accident unrelated to battle, or that it was removed as a punitive measure.

The judicial amputation of hands or feet is a known punishment utilised in the MAS and LAS periods. The lawful removal of a hand was associated with theft (Ine 18, 37, Alfred 6, Cnut II 30.4), production of false coinage (Æthelstan II 14.1, Æthelred IV 5.3, Cnut II 8.1, 8.2), and the swearing of false oaths (Cnut II 36, 48.1) (Reynolds 2009: 173). Although the earliest of these law codes is from the later 7th century (after the St. Anne's Hill cemetery was in use), it is plausible that similar judicial views towards these crimes existed in earlier times and were only codified at a later date. If SAH-111's hand was amputated as a punitive measure, along with being visually distinctive, the absence of a hand would have been a constant reminder to the surrounding community of the crime committed, with its probable negative social consequences. If the hand was lost due to an accidental injury, SAH-111 may still have experienced similar negative social

consequences solely due to the association made between amputation and crime.

It is therefore noteworthy that, despite the potential negative social implications, visible distinctiveness, and functional restriction, SAH-111 was buried with a grave good with symbolic and powerful connotations. SAH-111's status as a warrior in life may have been such an essential aspect of his identity that, despite his inability to fight at the end of his life, those burying him still considered it necessary to reflect in death. If SAH-111 was not a warrior, which is equally possible, explanations for the inclusion of weaponry in his burial are numerous (Sections 3.2.6.3.1 and 7.2.4.5). The inclusion of a spear may have reflected the social or political status of SAH-111 or his family, or bestowed upon SAH-111 an identity that was unavailable to him in life (Brunning 2013). Or perhaps it signified that, despite his physical impairment, SAH-111 still occupied a powerful, authoritative position in his community.

7.7.4.2 St. Anne's Hill 309

SAH-309 (adult male, Grave 308) had fusion of the left carpals and first metacarpal, which might have resulted in stiffness and limited range of motion of the wrist. SAH-309 was afforded normative funerary treatment in terms of body and limb positioning (Figure 7.54 and Figure 7.55), and was buried on the southern margin of the cemetery without grave goods. SAH-309 (in Grave 308) is included in a group of graves that is located in a small southern extension of the main burial group (Figure 7.56). A relatively straight line of mostly S-N oriented graves appears to form the southern border of the cemetery on the southwestern side (green graves in Figure 7.56) (Greatorex 2016b). Because the southern ends of these graves line up well, it is possible that there was a marked boundary of the cemetery in this area. Just south of Graves 250 and 275, there is a localised cluster of burials (red graves in Figure 7.56). Of these eight graves, seven are oriented W-E (keeping in mind that SAH-259 in Grave 257 is actually oriented with the head to the east). It is possible that those digging the graves in this southern area of the cemetery ran out of room and were forced to extend the boundaries of the cemetery slightly further south. So, although these graves are on the southern margin of the cemetery, they are buried in a cluster of similarly oriented graves, probably indicating social cohesion rather than exclusion.

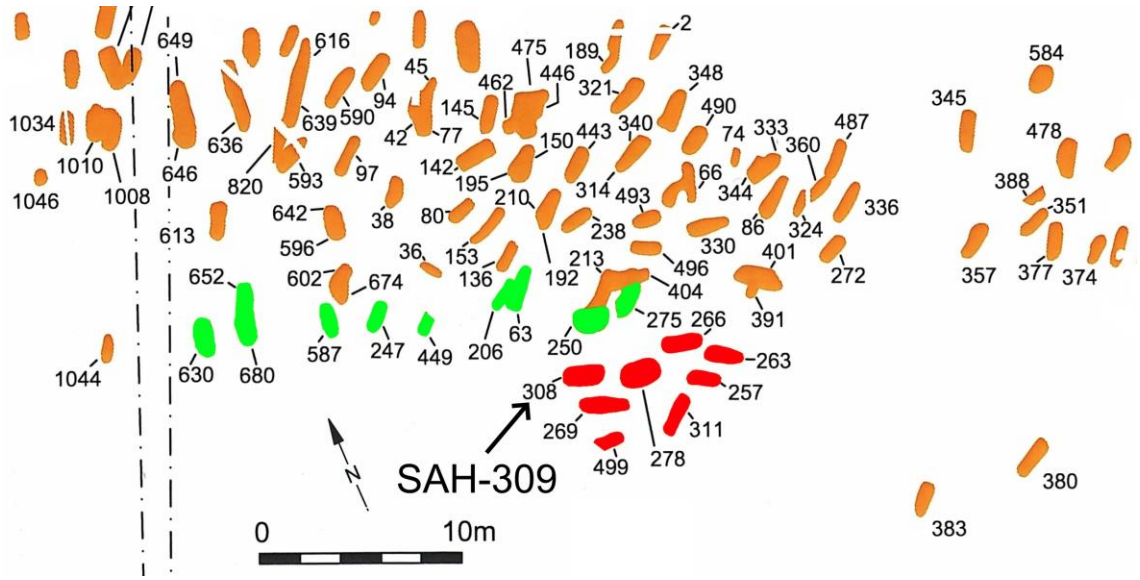

Figure 7.56- Detail of the southern border of the St. Anne's Hill cemetery demonstrating the location of SAH-309. Source: Greatorex (2016b: 34), and modified by current author. © UCL Archaeology South-East. NB: numbers in black represent grave context numbers which differ from skeleton context numbers; green indicates graves in a relatively straight row along the southern margin; red indicates graves that have extended slightly farther south than the southern margin.

7.7.4.3 St. Anne's Hill 346

SAH-346 (adult who was possibly male, Grave 345) had a swelling of the midshaft of the left femur and severe osteoarthritis of the left hip (Waldron 2009: 34). Although the cause of the femoral swelling is unclear, it is possible that the osteological alterations resulted in an altered gait and subsequent secondary osteoarthritis of the left hip, which may have restricted normal social and economic participation. Due to the poor preservation of SAH-346 *in situ*, the leg position could not be determined with complete certainty, but it seems that the left leg was bent over a straight right leg (Figure 7.54 and Figure 7.55). If this was the case, SAH-346 would be the second individual in this cemetery to be buried with this leg position. Perhaps because of the alterations to the left lower limb, which may have restricted movement of the hip joint, the left leg could not be easily straightened by those burying SAH-346, and therefore it remained slightly bent. Or perhaps those burying SAH-346 wanted to draw attention to his impaired limb, although the leg probably did not look that much different from normal when SAH-346 was motionless.

SAH-346 was buried immediately south of the large, empty circular area of land within the north-eastern part of the cemetery. This area contained six Iron Age pits, one Anglo-Saxon cremation burial, and only one Anglo-Saxon

inhumation burial (Grave 235) (Greatorex 2016b). Although many Anglo-Saxon cemeteries are associated with prehistoric earthworks (Williams 1997), Greatorex (2016b) suggests that it is unlikely that a feature of this size would have left no trace if a shallow cremation and six Iron Age pits were preserved in the same area. In addition, no evidence was recorded of archaeological features associated with structures or enclosures (e.g. fence lines, post holes) that might suggest that this area was kept clear of burials to allow for the construction of buildings (Greatorex 2016b). The possibility that this area was "an open ceremonial or social 'arena' during funerary rites/communal gatherings" remains, and because this area is delineated by graves ranging from the 5th/6th to 7th centuries, it appears as if this space was kept empty throughout the entire use of the site (Greatorex 2016b: 37).

Similar empty spaces among high density burial zones in Anglo-Saxon cemeteries have been reported at Caister-on-Sea (Rodwell 1993) and Sedgeford, both in Norfolk, Hamwic in Southampton (Andrews 1997: 203), Norton East Mill in Cleveland (Sherlock and Welch 1992: 15), and Staunch Meadow in Suffolk (Tester et al. 2014: 378). Perhaps the empty space was an area for grieving family members and friends to gather (Tester et al. 2014: 378), or perhaps it had some other function in the funerary process. Regardless of its function, it is likely that this space held functional or symbolic importance to the community of St. Anne's Hill as all the burials respected its boundaries.

Thus, for SAH-346 to be buried directly on the margins of this space is noteworthy. If an individual was socially isolated in life, it seems unlikely that, in death, their body would be placed adjacent to a probable gathering area for living members of the community. With a burial location so close to a public space, a grave would be seen and interacted with more frequently, perhaps lengthening the amount of time the individual was remembered or memorialised by the living community.

It is also possible that placement on the margins of this central space may have been reserved for individuals of higher social status within the community. Grave 235, the only grave that was buried within the empty space, included the only iron seax found in this cemetery. In addition, many of the other graves on the margins of the empty space also contained less frequent and potentially more expensive grave goods (e.g. copper disc brooch in Grave 584, biconical jar in

Grave 490, two brooches and two keys in Grave 6, shield and spear in Grave 156, two brooches in Grave 752, silver ring in Grave 698). While various interpretations of these grave goods should be kept in mind (see Section 3.1.2), it is possible that they may have been indicative of a higher social or economic status. On the other hand, there were several graves adjacent to the empty space that contained no grave goods (Graves 2, 333, 487, 333) or more common grave goods (e.g. iron object in Grave 74, buckle and knife in Graves 348 and 831, and a pin, buckle, and knife in Grave 803). Thus, while not all of the graves adjacent to this empty space contained rich burial goods, many of them did, suggesting that higher economic or social status might have been appropriate reasons for burial in this location. Although SAH-346 was not buried with any grave goods, the fact that they were included in such a highly visible area of the cemetery suggests that, despite their possible physical impairment and functional restrictions, a visible burial in this location was considered appropriate by their family and community.

7.7.4.4 St. Anne's Hill 481

SAH-481 (adult male, Grave 472) had probable leprosy, a disease which would have resulted in facial deformity including soft tissue alterations (Andersen and Manchester 1992), hand deformities that may have restricted functionality, and pain and swelling of the lower legs (Resnick 2002g), which may have resulted in an abnormal gait. SAH-481 was afforded very clear non-normative burial treatment: he was buried on his left side (2.1%) in a position that was classified as other (2.7%) (between the flexed and crouched positions) (Figure 7.54). His right leg was severely bent upwards towards the body, and the right knee crossed the femur of the left leg, which was slightly bent to the left. In addition, SAH-481 was buried in isolation from the rest of the main burial group. The 1992 evaluation of St. Anne's Hill consisted of removing the topsoil and cleaning and documenting the features observed (Greatorex 2016a). This revealed the presence of 42 graves to the northwest of SAH-481, which were much less dense than the main burial group (Greatorex 2016a). Taking into account the unexcavated graves to the east of the main burial group, SAH-481 is not quite as far from the main burial group as it first appears. However, he was certainly placed in deliberate isolation to set him apart from the rest of the population.

It should be noted that there were three other individuals buried in isolation with no evidence of skeletal physical impairment: SAH-62 (Grave 13, older adult possible female) who was buried on the left side (2.1%) in a flexed (10.9%) position, SAH-381 (Grave 380, unsexed adolescent) who was buried on the right side (3.5%) in a flexed position (10.9%), and SAH-384 (Grave 383, unsexed adult) for whom body position/orientation was not available. Therefore, while different types of individuals were buried in isolation at St. Anne's Hill, there seems to be an association between isolated burial and the need to further distinguish the deceased individual via non-normative body positioning or orientation (right or left side in a flexed position).

SAH-481 was also buried with a rare 4th to 5th century Late Roman copper intaglio (engraved with a peacock and dot pattern) that would have been part of a bezel (finger) ring (Figure 7.57). Finger rings were found in four graves at St. Anne's Hill, two of which were identified as Late Roman (4th to 5th centuries AD). It is rare to find these artefacts in Anglo-Saxon cemeteries, and there are no other Anglo-Saxon cemeteries that contain more than one (Griffin 2016). Thus, in addition to being distinguished by his body position and burial location, SAH-481 was also set apart from the rest of the population with the inclusion of a rare finger ring.

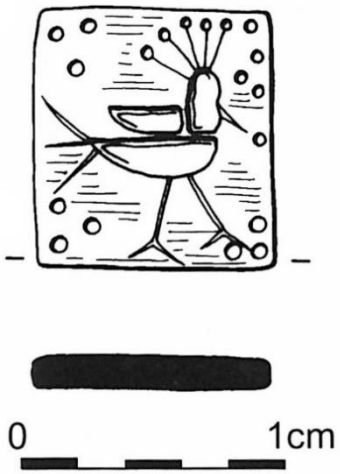

Figure 7.57- Late Roman copper intaglio for a bezel ring found with SAH-481. Source: Clifford et al. (2016:76). © UCL Archaeology South-East.

The inclusion of the rare Roman intaglio is interesting: it may have been an object of personal significance to SAH-481, or a curated artefact that functioned as a family heirloom. It seems likely that the individuals living at St.

Anne's Hill would have been aware that such an object was ancient (or at least special if they did not know when it was made), as the stylistic aspects and imagery used would have been distinctive from what was commonly found in EAS objects. It is possible that this bezel ring had been in SAH-481's family for generations, and with each new owner, it would have acquired its own biography based on who wore it, their actions in life, and their relationships to other individuals in the community or region (Devlin 2007). Therefore, it seems likely that the bezel ring found with SAH-481 was imbued with mnemonic, symbolic, and personal significance, and the fact that it was permanently removed from circulation as a curated object for burial with SAH-481, suggests that those burying him wished to honour his ancestral and familial associations.

The significance of the bezel ring influences the interpretations of SAH-481's isolated burial. It is possible that SAH-481's disease, which would have been noticeable to the surrounding community, had negative social consequences that necessitated separation of his corpse in death, potentially to keep the survivors physically or spiritually safe. However, the other individuals buried in isolation did not have skeletal physical impairment and therefore, if burial in isolation had negative connotations at St. Anne's Hill, other motivations for this funerary treatment must also be considered (e.g. suspicious or bad deaths, heresy or excommunication, foreignness, immoral actions or behaviours, the conditions of birth, family status) (Ucko 1969; Shay 1985; Tsaliki 2008).

One of the other isolated individuals (SAH-380) was buried with iron arrowheads, which were unique in this cemetery (and unique to this cemetery in the sample of nine EAS cemeteries analysed), which supports the theory that burial in isolation did not preclude the inclusion of unique, potentially symbolically significant burial goods. The burial of both these individuals in isolation with unique grave goods encourages further interpretations: perhaps burial in isolation was not perceived negatively, but instead was viewed as a sign of respect. Burial in isolation sets the individual apart, as perhaps they were set apart in life due to a special occupation, status, or identity. Burial in isolation might have made grieving for this individual more personal, as there would have been no other burials or mourners in the vicinity. Burial in isolation might also, paradoxically, have made the burial *more* visible. The grave might have been covered in a barrow mound or accompanied by other funerary structures (although evidence

of this was not identified). Besides being physically more visible, burial in isolation might have made the grave more socially visible: if someone was buried away from the rest of the population, this would have been a noticeable event within a small community, perhaps raising awareness of the individual's passing and consequently maintaining them within living social memory for a longer period of time. Graves placed close together in a densely populated area might have "blended together" visually over time due to their physical proximity, or socially if the area became associated with "those ancestors" rather than with a specific individual. Visual and social distinction throughout time may not have been such an issue if an individual was buried in an isolated area that was still relatively close to the main cemetery.

It is not possible to determine whether burial in isolation at St. Anne's Hill should be considered socially exclusive or as a symbol of respect. However, the fact that SAH-481 was buried with a late Roman bezel ring with probable personal and/or mnemonic significance suggests that, despite his visual deformities and functional restrictions, those burying him still wanted to afford him respect and draw symbolic connections between him and his family.

7.7.4.5 St. Anne's Hill 1049

SAH-1049 (young adult who was possibly male, Grave 1048) had tuberculosis which resulted in severe kyphosis. Symptoms of tuberculosis are discussed in Section 7.3.4.3, and would probably have negatively affected normal participation in social and economic activities. SAH-1049 was afforded normative burial treatment with regards to body and limb positioning and grave good inclusions (Figure 7.54). This individual was, however, buried on what was likely to be the western margin of the cemetery. Harrington (2016b) points out that this western area of the cemetery appears to be somewhat separated from the main burial group and is more organised. There are NW-SE rows (Graves 1068, 1066, 1060 and Graves 1072, 1048, 1050, and 1032) and organisation in the SW-NE orientation as well (Graves 1068, 1062, 1070, 1056, 1052, and possibly 1038 and 1036) (Figure 7.58). The graves in this area are not all contemporary with one another, suggesting that these individuals were placed here deliberately over many years (Harrington 2016b), perhaps for a common reason remembered over several generations. Thus, while SAH-1049 was located on the western margin

of the cemetery, he was surrounded by other graves in a similar organisation and orientation, indicative of social inclusion.

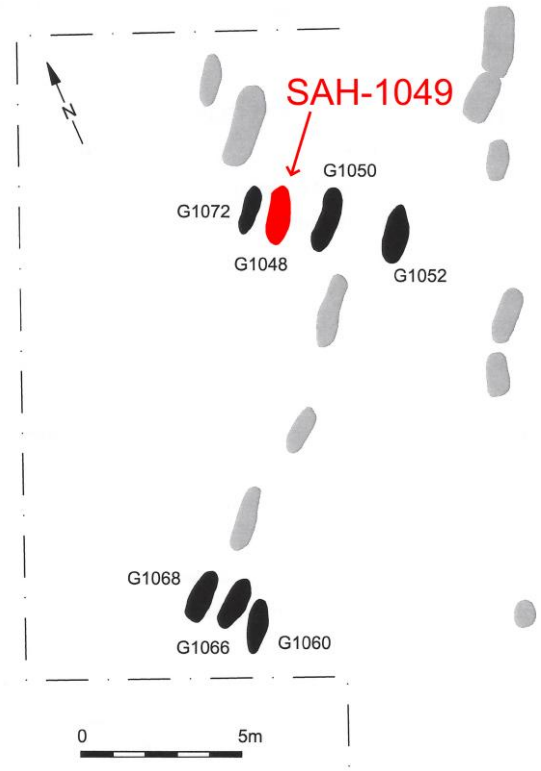

Figure 7.58- Detail of the slightly separated area of burial in the western part of the St. Anne's Hill cemetery demonstrating the location of SAH-1049 (in red). Source: Harrington (2016b: 218), and modified by current author. © UCL Archaeology South-East. NB: numbers in black represent grave context numbers which differ from skeleton context numbers; black= NW-SE rows, grey= SW-NE rows.

7.7.4.6 Summary

Funerary treatment of the individuals with physical impairment at St. Anne's Hill was variable, as observed in other EAS cemeteries. Many different burial locations were considered appropriate for individuals with physical impairment. SAH-481 was buried in isolation (which may not have had negative connotations), while SAH-346 was buried adjacent to an empty area, which may have functioned as a gathering place for the living in the funerary process. Despite their restricted lower limb movement, it was still considered appropriate to bury this individual in a highly visible location, which hints at the social importance of SAH-346, and a positive relationship between the deceased and those performing the burial. Finally, SAH-111 and SAH-744 were buried in central locations, while SAH-309 and SAH-1049 were buried towards the margins of the cemetery, but in groups of burials with similar orientation and mortuary treatment which is more suggestive of social inclusion than exclusion.

Grave good inclusion also varied between the individuals with physical impairment: some were not buried with grave goods, while SAH-111 and SAH-481 were buried with symbolically significant artefacts. The unique and antique late Roman bezel ring buried with SAH-481 and the spear buried with SAH-111 indicate that the community considered it appropriate to associate individuals with physical impairment with objects that had personal, mnemonic meaning, or objects that were used to reflect social significance or authority. The fact that symbolically and ideologically significant artefacts were included in the graves of individuals who would have been visually distinctive and functionally restricted suggests that, despite their differences, their survivors cared about them and were concerned with how they were portrayed or respected in death.

As inferred from the mortuary treatment of the individuals with physical impairment at St. Anne's Hill, it appears that the relationships these individuals formed with their family and community varied, as would be expected. There were no general negative attitudes towards individuals with physical impairment implied from the mortuary treatment observed, and instead some of them were afforded burial rites suggestive of respect, care, and social inclusion.

7.8 Watchfield

7.8.1 General funerary treatment

The funerary treatment variables which were recorded for the Watchfield cemetery (5th to 7th centuries) based on information provided by Scull et al. (1992) and the unpublished archive held by the Oxfordshire Museums Service (accessed 2017), include grave dimensions, orientation, shape, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, post-holes, other individuals (multiple burial), superimposed burials, and grave goods.

7.8.1.1 Grave orientation and shape

A majority of the graves were oriented S-N (74.4%), although burial in the W-E orientation was also common (20.5%). The shape of the grave was only recorded in three of the 25 graves excavated in 1983, so the overall sample size,

including graves excavated in 1989, is quite small (N=20) (Section 5.3.7). A majority of the graves were sub-rectangular shaped (75.0%), two were oval shaped (10.0%), and three were rectangular shaped (15.0%).

7.8.1.2 Body and limb positioning

Drawings or *in situ* photographs were not provided for a number of individuals due to their poor preservation, so the written descriptions provided by Scull et al. (1992) regarding body and limb position were used. A majority of the individuals were supine (84.6%) and extended (83.3%), although flexed burials were somewhat common (12.5%). Burial in the right (7.7%), left (3.8%), and prone orientations (3.8%), and in the crouched position (4.2%) is considered non-normative. Only adult males were buried in the prone orientation, on their left sides, or in the crouched position (Appendix 2: Section 7).

7.8.1.3 Structures and furniture

Five individuals (11.6%) were buried with stone inclusions: three graves contained evidence of stone-lining and two graves included a large piece of limestone (WF-349 in the lower limb region and WF-75 over the right humerus). There is no direct evidence of coffin use, however two non-adults (WF-333 and WF-348) were in graves that were deeper and more regularly cut than the others, perhaps suggesting that they were buried in coffins (Scull et al. 1992). These two graves also have direct evidence of marker posts and are physically separated from the main burial population.

7.8.1.4 Multiple burial

In Grave 309, foetus WF-307 was inside the left forearm of WF-308 (young adult female). It is not stated explicitly, but this was likely a contemporary multiple burial. Although not a multiple burial, Grave 127 (WF-117) and Grave 319 (WF-318) were the only superimposed graves in the entire cemetery (Scull et al. 1992). WF-117, the only crouched burial in the cemetery, was at the same orientation and cut the foot end of WF-318, the only prone burial in the cemetery, which

suggests that the exact location of WF-318 must have been known at the time of the burial of WF-117 (Scull et al. 1992).

7.8.1.5 Grave goods

Table 7.28 provides a summary of the grave good types and frequencies at Watchfield. Of the 13 individuals buried without grave goods, 11 were non-adults (84.6%) suggesting that it was more appropriate to bury non-adults without grave goods. It should be noted, however, that many of the non-adult graves which did not contain grave goods were highly disturbed, and therefore the percentage of non-adults buried without grave goods may be slightly increased.

Table 7.28- Grave good types and frequencies for the Watchfield cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	13	31.0
Weaponry			
Shield	6	6	14.3
Spear	4	4	9.5
Sword	1	1	2.4
Dress accessories			
Brooch	18	12	28.6
Beads	241	10	23.8
Buckle	11	10	23.8
Pin	5	5	11.9
Tools and personal equipment			
Knife	18	18	42.9
Girdle rings/hangers	4	4	9.5
Tweezers	3	3	7.1
Scoop	1	1	2.4
Scraper + pick	1	1	2.4
Brush casing	1	1	2.4
Balance/weight*	4	1	2.4
Balance pan*	2	1	2.4
Vessels and containers			
Cauldron	1	1	2.4
Bucket	1	1	2.4
Leather vessel	1	1	2.4
Leather case	1	1	2.4
Glass vessel fragment	1	1	2.4
Other			
Coin*	8	2	4.8
Pierced lead disc	1	1	2.4
Ironstone nodule	1	1	2.4

NB: *see Appendix 2: Section 8.1 for discussion of the distinctive burial of WF-67 (young adult male with no evidence of skeletal physical impairment).

7.8.2 Palaeopathological analysis

Four individuals were identified as potentially physically impaired (9.3% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.29. Refer to Appendix 3: Section 8.2 for detailed differential diagnoses for each individual.

Table 7.29- Summary of the palaeopathological analysis of the individuals with physical impairment from Watchfield.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
WF-5	MA	M	- Deformation of R humeral head with loss of concavity - R humerus is 76mm shorter than L - R ulna is 15mm shorter than L	- BPP - **Traumatic injury**	- Short R arm→ visually distinctive - Restricted use of R upper limb	Convincing; acquired (long)	Figure 7.59
WF-117	MA	M	- Diffuse smooth, striated, + porous PNB deposition on R/L tibiae - Diffuse irregular compact bone deposition on R/L fibulae→ lumpy surface texture	- Osteomyelitis - Treponemal disease - HOA - Trauma - Leprosy - **Non-specific inflammation/infection**	- Swelling, redness, heat, pain, + restricted use of lower limbs→ abnormal gait?	Possible; acquired (med-long)	Figure 7.60
WF-312	YA	F	- Deformation of proximal + distal joint surfaces of R elbow (not examined by current author)	- Septic arthritis - Tuberculous arthritis - **Traumatic injury and secondary osteoarthritis**	- Limited range of motion, instability, + nerve damage - Restricted use of R elbow	Probable; acquired (med-long)	Figure 7.61
WF-318	YA	M?	- Porous woven bone on L zygomatic - Lytic lesion/depression in surface of unidentifiable facial bone (maxilla or sphenoid) with irregular new bone formation	- **Localised traumatic injury** - **Non-specific inflammation/infection**	- Very little evidence, but possible chronic infection may have affected respiration or vision - Possible soft tissue involvement	Possible; end of life	Figure 7.62

NB: differential diagnoses in **bold** are considered the most likely.

Figure 7.59- Length and size discrepancy of the left and right humeri of WF-5. Produced with kind permission of the Oxfordshire Museums Service.

Figure 7.60- Striated and smooth compact bone deposition along the lateral midshaft of the right tibia of WF-117. Produced with kind permission of the Oxfordshire Museums Service.

Figure 7.61- Traumatic injury to the right elbow of WF-312. Source: Unpublished archive held by the Oxfordshire Museums Service. © Oxfordshire Museums Service.

Figure 7.62- Irregular bone growth and a possible lytic lesion on a cranial fragment from WF-318. Produced with kind permission of the Oxfordshire Museums Service.

7.8.3 Funerary treatment of the individuals with physical impairment

The average grave dimensions for the adult burial population as well as the dimensions of the graves of the adult individuals with physical impairment are provided in Table 7.30.

Table 7.30- Grave dimensions for the adult burial population and for the adult individuals with physical impairment at Watchfield.

	Length (m)	Width (m)
Site average	1.97	0.73
Standard deviation	0.15	0.10
WF-5	N/A	N/A
WF-117	1.90	0.80
WF-312	2.0	0.70
WF-318	1.74	0.70

NB: Underlined values are more than one standard deviation from site average.

The margins of the cemetery were generally determined with a series of trenches (less definitively to the north) (Scull et al. 1992) (Figure 7.63). No burials were recovered in Trenches 1, 2, and 7. A single burial was discovered on the western end of Trench 3, suggesting that no further burials were located to the east. Trench 4 located the western border of the cemetery, and due to the intact burial of an infant (Grave 166), Scull et al. (1992) argue that it is unlikely that much burial disturbance occurred in this area. Trench 5 clearly determined the southern and eastern borders of the cemetery, while Trench 6 appeared to be beyond the southeast border of the cemetery, with the recovery of only two cremations and an infant burial (Scull et al. 1992).

Scull et al. (1992) estimated that the main cemetery probably occupied around 0.36 hectares and contained 300-350 burials, most of which were not recovered due to long-term ploughing and machine activity to remove the topsoil in 1983. Because so many burials are missing, it is difficult to determine where areas of marginality may have existed. It is possible that WF-5 was located on the western margin of the cemetery, but this is only tentative due to the poor preservation of the cemetery as a whole, and the lack of excavation immediately to the west of WF-5. In the southwest corner, there appears to be a clustering of individuals with physical impairment WF-117, WF-312, and WF-318 (Figure 7.63).

Table 7.31 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

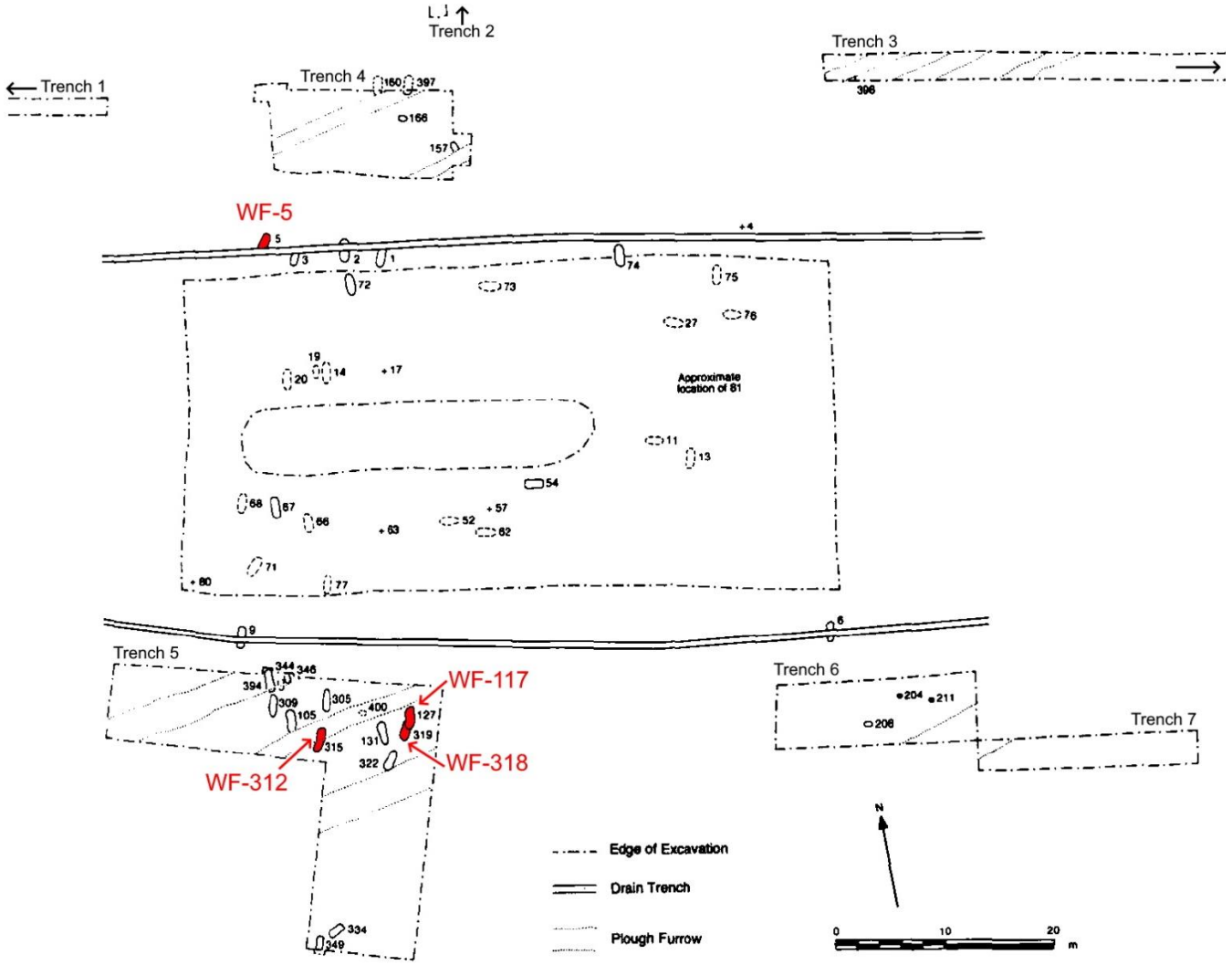

Figure 7.63- Map of the Watchfield cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Scull et al. (1992: 158), and modified by current author. © Royal Archaeological Institute. NB: numbers in black represent grave context numbers which differ from skeleton context numbers.

Table 7.31- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Watchfield.

Variable	N	Type	n	% of pop	WF-5	WF-117	WF-312	WF-318
Grave orientation	39	W-E	8	20.5	SW-NE	S-N	S-N	S-N
		S-N	29	74.4				
		SW-NE	**2**	**5.1**				
Grave shape	20	Sub-rectangular	15	75.0	N/A	Sub-rectangular	Sub-rectangular	Sub-rectangular
		Rectangular	3	15.0				
		Oval	**2**	**10.0**				
Body orientation	26	Supine	22	84.6	Supine	Prone	Supine	L side
		R side	**2**	**7.7**				
		L side	**1**	**3.8**				
		Prone	**1**	**3.8**				
Body position	24	Extended	20	83.3	Extended	Flexed	Extended	Crouched
		Flexed	3	12.5				
		Crouched	**1**	**4.2**				
Head position	12	L facing	7	58.3	N/A	L facing	N/A	L facing
		R facing	4	33.3				
		Forward facing	**1**	**8.3**				
Arm position	18	Both bent	7	38.9	R bent, L straight	Both bent	R bent, L straight	Both bent
		Extended	6	33.3				
		R straight, L bent	3	16.7				
		L straight, R bent	2	11.1				
Leg position	24	Extended	19	79.2	Extended	Bent L	Extended	Bent L
		Bent L	3	12.5				
		Bent R	**2**	**8.3**				

Variable (cont'd)	N	Type	n	% of pop	WF-5	WF-117	WF-312	WF-318
Coffin	43	Absent	41	95.3	Absent	Absent	Absent	Absent
		Possible	**2**	**4.7**				
Stone	43	Absent	38	88.4	Absent	Absent	Absent	Absent
		Present	5	11.6				
Marker post	43	Absent	41	95.3	Absent	Absent	Absent	Absent
		Present	**2**	**4.7**				
Multiple burial	43	Single	41	95.3	Single	Single	Single	Single
		Contemporary horizontal	**2**	**4.7**				
Superimposed burial	43	Not superimposed	41	95.3	Not superimposed	Superimposed	Not superimposed	Superimposed
		Superimposed	**2**	**4.7**				
Grave goods	42	Jewellery	14	33.3	Weapon[1]	Other[2]	Jewellery[3]	Weapon[1]
		None	13	31.0				
		Weapons	8	19.0				
		Other	7	16.7				

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population. Grave goods: [1]= Spear (9.5%), buckle (23.8%), knife (42.9%); [2]= buckle (23.8%), knife (42.9%); [3]= Saucer brooch x2 (28.6%), knife (42.9%), pin (11.9%), toilet pick + scraper (2.4%), brush casing (2.4%), coin (4.8%), expanding ring, ring; percentage indicates the % of graves in which these items were found.

7.8.4 Interpretations

The grave drawings for the individuals with physical impairment (excluding WF-5) are provided in Figure 7.64.

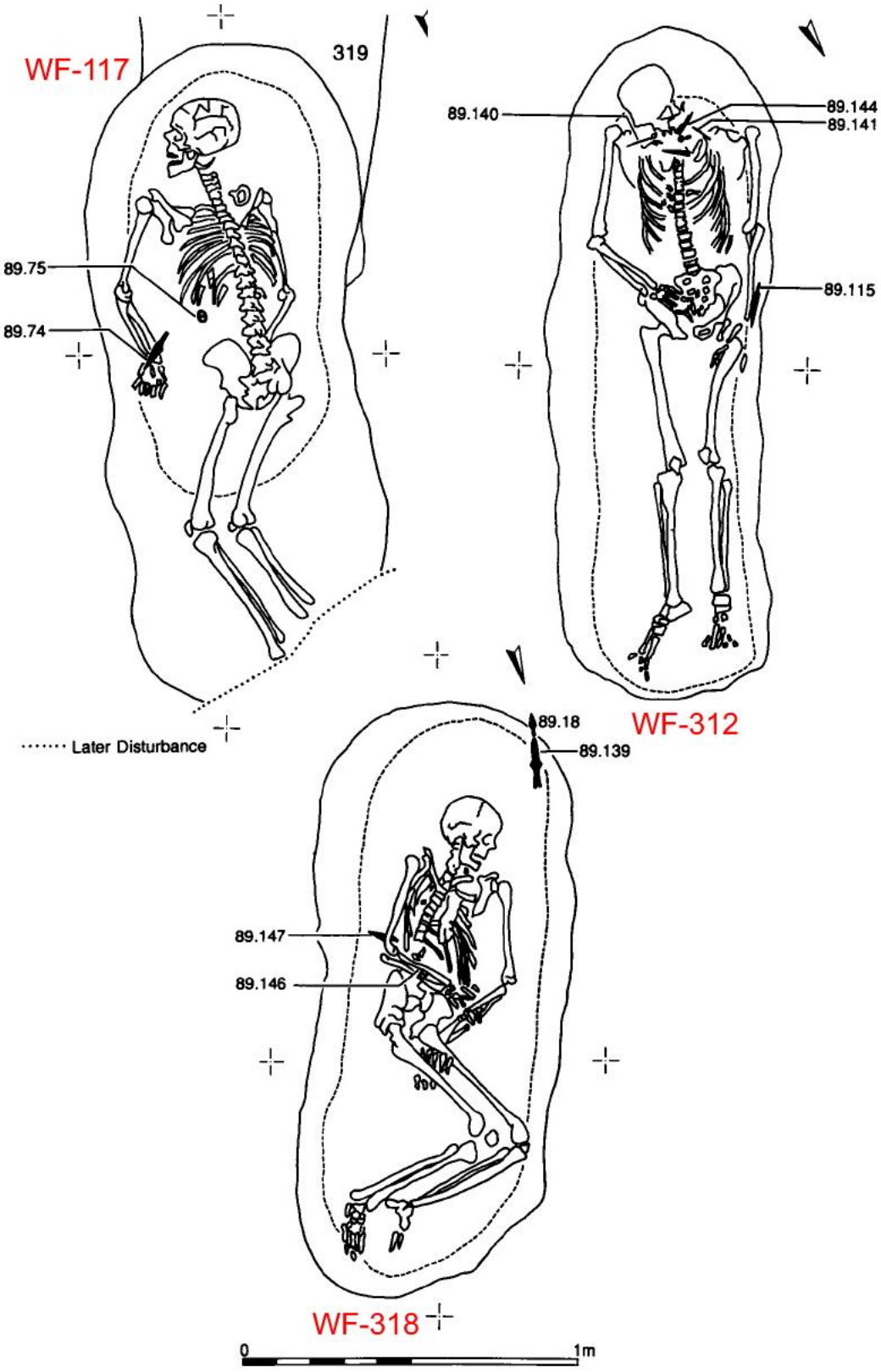

Figure 7.64- Grave drawings for the individuals with physical impairment at Watchfield (excluding WF-5). Source: Scull et al. (1992), and modified by current author. © Royal Archaeological Institute.

7.8.4.1 Watchfield 5

WF-5 (middle adult male, Grave 5) experienced a fracture and shortening of the right humerus, which would have resulted in visual distinctiveness and restricted use of the right arm. Neither a photograph nor a drawing of WF-5 *in situ* were available, but from written records it appears that this individual was buried extended (83.3%) and supine (84.6%) (Scull et al. 1992: 161). WF-5 is one of two individuals recorded as being oriented SW-NE (5.1%), however this slight deviation from the most common S-N orientation (74.4%) is probably insignificant.

WF-5 was buried with a spear (9.5%), a grave good which is commonly found in EAS weapons burials. Because the right humerus was severely shortened, the fracture took place in childhood, before the humerus had stopped growing. Therefore, WF-5 would have entered adulthood with a visually distinctive and functionally restricted arm. Although it is possible that WF-5 was able to wield a weapon (or perhaps he was left hand dominant), it is more likely that the asymmetry of his upper limbs would have prevented him from participating as a warrior. Therefore, the inclusion of a spear probably indicated that, despite his visible deformity, WF-5 occupied a position of social, familial, or political importance, or it may have altered his self/social identities in order to improve his reputation or the reputation of his family (see Sections 3.2.6.3.1 and 7.2.4.5).

7.8.4.2 Watchfield 117 and Watchfield 318

WF-117 (middle adult male, Grave 127) had a non-specific inflammation/infection of the lower legs. WF-318 (young adult who was probably male, Grave 319) had a non-specific inflammation/infection or localised traumatic injury on the left side of the face. WF-117 was the only prone burial (3.8%), while WF-318 was the only crouched burial (4.2%) in the cemetery (Figure 7.64). WF-117's grave was on top of WF-318's at almost the same orientation, although it only cut the foot end of WF-318's grave (Figure 7.65). The placement of WF-117's grave suggests that the burial location of WF-318 may have been marked and still visible when WF-117 was buried (Scull et al. 1992). This is the only instance of superimposed burials in the Watchfield cemetery. WF-318 was buried in a grave that was more than one standard deviation shorter than the site

average, which is probably due to the fact that he was laid in a crouched position, so a longer grave was unnecessary.

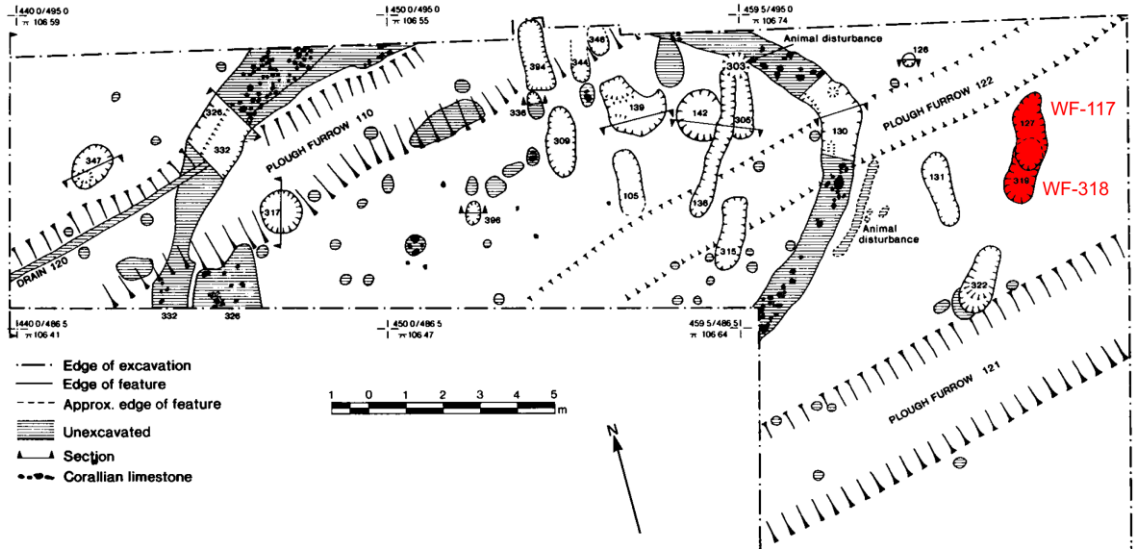

Figure 7.65- Close up of the south-western corner of the Watchfield cemetery demonstrating the location of WF-117 and WF-318 (in red). Source: Scull et al. (1992: 136), and modified by current author. © Royal Archaeological Institute. NB: numbers in black represent grave context numbers which differ from skeleton context numbers.

The bilateral tibial and fibular periostitis observed in WF-117 was similar in appearance to many confirmed cases of archaeological leprosy (which may have also caused facial deformities) (Andersen and Manchester 1992), however, as the feet and viscerocranium are absent, only a diagnosis of a non-specific inflammation/infection can be proposed. It is possible that WF-117 walked with an altered gait due to the pain that was probably associated with the periostitis in the tibiae and fibulae (Golding 1985). Likewise, due to the post-mortem damage to the facial bones of WF-318, the extent of the facial inflammation/infection is unknown. Whether there would have been soft tissue involvement is difficult to say, but it is possible that WF-318's sight and breathing were compromised if the soft tissue alterations were severe. Therefore, although definite physical impairment cannot be confirmed for WF-117 or WF-318, it is certainly noteworthy that the only two individuals buried in non-normative positions were also potentially physically impaired.

WF-318 was buried with a spear (9.5%), a grave good which is typical of EAS weapons burials. WF-318 may have been a warrior who was prevented from participation towards the end of his life due to potential difficulties breathing or seeing caused by the non-specific inflammation/infection of the facial region. It is

similarly possible that WF-318 was not a warrior in life, and that the spear drew symbolic connections between WF-318 and authority, or functioned as a symbolic object which reflected his or his family's social or political status (see Sections 3.2.6.3.1 and 7.2.4.5).

7.8.4.3 Watchfield 312

WF-312 (young adult female, Grave 315) experienced a traumatic injury to the right elbow that probably resulted in restricted use of the right upper limb. WF-312 was buried extended (83.3%) and supine (84.6%), and was oriented S-N (74.4%) (Figure 7.64). WF-312 was buried with a toilet pick and scraper which were most likely worn suspended from the neck, as well as the casing for a cosmetic brush (Scull et al. 1992). While all three of these toiletry implements were unique in this cemetery, the inclusion of toiletry implements in EAS cemeteries is not uncommon, with tweezers included in three other burials in this cemetery.

A pierced Roman bronze coin (4.7%) was also buried with WF-312, possibly in association with the toilet pick and scraper. The individuals in this community would probably have been aware that the Roman coin was ancient, as it would have appeared different from the coins the Anglo-Saxons were utilising at the time. Therefore, this coin may have had symbolic connections with the past and with the ancestors who had worn or used the coin in past generations. Although brooches were commonly found at Watchfield (27.9%), WF-312 was buried with two, both of which showed evidence of repair in antiquity. The fact that these objects were altered and mended suggests that they might have been familial or communal heirlooms that had been passed down through generations and used in life by various individuals. These curated objects probably represent mnemonic objects that had acquired object biographies through their associations with specific people and activities (Devlin 2007). Therefore, their inclusion in the grave of an individual with physical impairment is notable. Someone decided that upon the death of WF-312, it was appropriate to remove three curated items from circulation for deposition in a burial from which they could not be retrieved. This suggests that despite her movement limitations, which may have negatively affected her ability to fully participate in economic and

social activities, WF-312 was considered worthy of burial with such meaningful items.

7.8.4.4 Clustered burial and marginality

WF-117, WF-312, and WF-318 were located on the south-western margin of the cemetery in a localised area. Apart from Graves 334 and 349 (isolated to the south), the cluster of burials in this area appears to define the south-western border of the cemetery, although the poor preservation and incompleteness of the cemetery as a whole should be considered. This area of burial consisted of 12 graves including 13 individuals: six adult females, five non-adults, and two adult males, both of whom may have been physically impaired with conditions that affected the facial region (Figure 7.66). In Grave 309, WF-307 (young adult female) was buried with WF-308 (foetus seven months in utero).

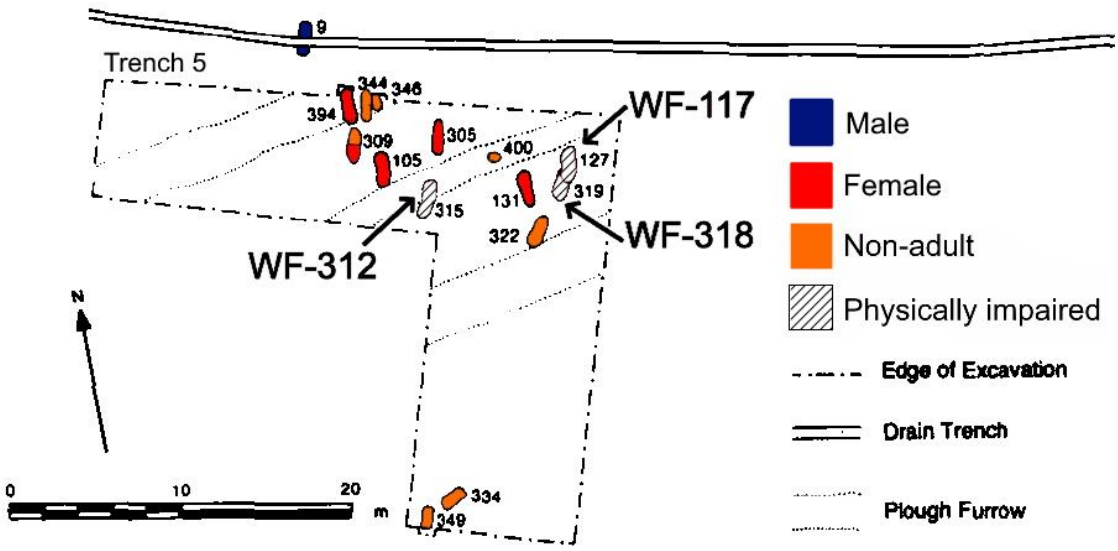

Figure 7.66- Close up of the south-western corner of the Watchfield cemetery identifying the location of females, non-adults, and individuals with physical impairment. Source: Scull et al. (1992: 158), and modified by current author. © Royal Archaeological Institute. NB: smaller numbers in black represent grave context numbers which differ from skeleton context numbers (larger numbers in black).

Scull et al. (1992: 258) argue that this localised area may have been reserved for individuals who were "unfortunate, or who were socially, economically, or physically vulnerable", as the only prone and crouched burials, three individuals with potential physical impairment, and a female who possibly died during childbirth were buried here. Another EAS example of the clustering of vulnerable individuals occurred at Great Chesterford, Essex: eight individuals

with skeletal pathologies (three of which would have been physically impairing) and a female with an infant were buried in an apparent cluster which was central in the cemetery (Zakrzewski et al. 2017). Clustering of individuals with physical impairment is discussed in more depth in Section 10.3.1.1, but in brief, Zakrzewski et al. (2017) argue that the burial cluster granted these individuals a group identity in death and reiterated their liminal status in life: many of them suffered from long-standing diseases, thus while they were not actively ill, they were also not healthy.

A similar spatial patterning may have occurred at Watchfield, with the south-western corner reserved for more vulnerable individuals or individuals who may have occupied liminal social spaces. It has been proposed that non-adults and some EAS females may have held positions of less power (Mui 2018) (Section 10.3.3), therefore the placement of two male individuals with physical impairment (who were also differentiated by their body positioning) alongside females and non-adults, might suggest that these two males also occupied positions of diminished power. This may have been influenced by their functional restrictions or visible differences (e.g. possible altered gait in WF-117 and possible soft tissue involvement in WF-318), which may have had negative social consequences. However, because the palaeopathological analysis of these two individuals was limited by poor preservation and completeness, a determination of their physical impairment status and the associated social consequences remains tentative.

The potential liminal identities in this group of individuals may have been emphasised by the fact that their burial cluster was on the south-western margin of the cemetery. Although determination of marginality at Watchfield was difficult due to poor preservation of the overall cemetery, the area approximately 15m south and west of the cluster was excavated with no detection of further human remains. A marginal burial cluster could be interpreted with negative connotations. However, it is also plausible that, instead, the marginal burial space may have been considered a special area that allowed liminal or vulnerable individuals to be kept together and protected in death.

7.8.4.5 Summary

The population of Watchfield was admittedly small, and the destruction and disappearance of many of the graves of the cemetery means that only a fraction of the data regarding physical impairment and funerary treatment was available. The inclusion of curated artefacts in the grave of WF-312 and of weaponry in the graves of WF-5 and WF-318 implies that symbolic objects with special social, political, or personal significance were appropriate to include, even if an individual was visually distinctive or functionally impaired. The clustering of three of the individuals with physical impairment hints at the assignment of a group identity in death. Their proximity to many non-adults and a female who may have died during childbirth might indicate that they were buried together because they were considered socially or physically vulnerable (Scull et al. 1992). Perhaps this vulnerability necessitated the granting of a group identity in death, which would provide them with company, safety, and comfort in the afterlife.

7.9 Windmill Hill

7.9.1 General funerary treatment

The funerary treatment variables which were recorded for the Windmill Hill cemetery (late 5th to early 7th centuries) based on information provided by the unpublished monograph draft by Bishop and Mordan (no date) held by Nottinghamshire County Council (accessed 2017) include grave dimensions, orientation, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, ring ditches, other individuals (multiple burial), and grave goods. A majority of the graves were oriented generally W-E (WNW-ESE and WSW-ENE orientations included) (89.0%). A small number of individuals were oriented generally E-W (8.2%) or S-N (2.8%).

7.9.1.1 Body and limb positioning

A majority of the individuals were supine (63.6%) and extended (51.7%), although flexed (31.0%) and crouched burials (17.2%) were also common. There were two prone burials: WMH-53 was buried directly on top of WMH-35 at a later time, suggesting that their association was not a coincidence, and that the location of the grave of WMH-35 must have been visible at the time of WMH-53's

burial (Bishop and Mordan no date: 76). It was more common for non-adults than adults to be buried on the right side and in the crouched position (Appendix 2: Section 8). It was more common for females than males to be buried on the left side and in the flexed or crouched positions (Appendix 2: Section 8).

7.9.1.2 Structures and furniture

There was no material evidence found in any of the adult burials to confirm the use of coffins. Bishop and Mordan (no date: 17-8) note that many of the extended, supine burials were placed in grave cuts that were longer than necessary, and suggest that perhaps this extra room was included to facilitate the lowering of a coffin or bier into the grave. Other possible evidence of coffin use includes the positioning of some feet and toe bones which appear to be pushed up against something that was inside of the grave cut (Bishop and Mordan no date: 18). Several iron strips were found buried with non-adult WMH-62, and have been interpreted as evidence of a casket (Bishop and Mordan no date: 18).

Stones were included in 16 graves (20.8%). The existing unpublished monograph reports 24 instances of stone inclusion (Bishop and Mordan no date: 75), however from the grave drawings, only 16 instances could be identified by the current author. In most of the graves, the use of stone is unclear (and is potentially not deliberate), while in three of the graves, it appears that the stone is part of a grave lining. There were several graves including large-sized stones or a large quantity of stones which appear to be included in the burials very deliberately (e.g. skull of WMH-57 pushed forward by a large stone at the back of the skull and a large stone between the legs, both of which were bent outwards; 63 stones placed on top of the double burial containing WMH-67 and WMH-67A; 12 stones placed on top of WMH-74; a large stone placed above the skull of WMH-66).

Three ring ditches were identified during excavation and appeared to be constructed in association with the burials of WMH-47, WMH-54, WMH-61, and WMH-66 (4.7%) (Bishop and Mordan no date: 66-8). although WMH-47 and WMH-66 were probably not the intended foci, as they were not centred within their respective ring ditches.

7.9.1.3 Multiple burial

There were two instances of contemporaneous double burial: WMH-67 (adult female) was buried on top of a WMH-67A (younger child) in a contemporaneous vertical double burial which was then covered with 63 stones. WMH-8A (older child) was buried across the pelvic area of WMH-8 (adult male) in a contemporaneous vertical double burial (Bishop and Mordan no date: 75-7). Prone burial WMH-53 was buried on top of prone burial WMH-35 in a sequential vertical arrangement.

7.9.1.4 Grave goods

Table 7.32 provides a summary of the grave good types and frequencies at Windmill Hill. Forty-nine individuals were not buried in association with any grave goods (57.6%). It should be noted that there were some disturbed burials which were not associated with any grave goods at the time of excavation, but may have been at the time of burial. Therefore, it is likely that the percentage of individuals buried without grave goods is slightly inflated. Of the 30 extended, supine individuals, 24 (80.0%) were buried without grave goods, while of the 28 crouched and flexed individuals, only four (14.2%) were buried without grave goods. Therefore, it appears that there was a correlation between body position/orientation and the provision of grave goods.

Table 7.32- Grave good types and frequencies for the Windmill Hill cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	49	57.6
Weaponry			
Spear	1	1	1.2
Shield	1	1	1.2
Dress accessories			
Beads	572	14	16.5
Brooch	29	10	14.7
Buckle	8	8	9.4
Clasp pair	6	6	7.1
Pin	2	2	2.4
Pendant	2	2	2.4
Tools and personal equipment			
Knife	13	13	15.3
Tweezers	1	1	1.2
Comb	1	1	1.2
Coins	1	1	1.2
Vessels and containers			
Pot	9	8	9.4
Pot sherds	11	3	3.5
Wooden vessel	2	2	2.4
Pot lid	2	2	2.4
Cup	1	1	1.2
Other			
Animal bone	N/A	7	8.2
Prehistoric flint	1	1	1.2
Piece of chalk	1	1	1.2

7.9.2 Palaeopathological analysis

Six individuals were identified as potentially physically impaired (7.1% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.33. Refer to Appendix 3: Section 9.2 for detailed differential diagnoses for each individual.

Table 7.33- Summary of the palaeopathological analysis of the individuals with physical impairment from Windmill Hill.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
WMH-10	MA	F??	- Ankylosis + kyphosis of six or seven thoracic vertebrae	- Osteomyelitis - Brucellosis - **Tuberculosis**	- Gibbus deformity - Disruption of spinal cord→ paraparesis/paraplegia, urinary/anal incontinence, pain, sensory impairment, + abnormal gait - General symptoms: weakness, fatigue, weight loss, fever, etc.	Convincing; acquired (med-long)	Figure 7.67
WMH-18	YA	F	- Slender gracile upper + lower limb long bones - Increased FNA	- Small stature - **Paraplegia/quadriplegia:** trauma to spinal cord, hereditary spastic paraplegia, poliomyelitis, CP	- If para/quadriplegia→ paralysis of lower limbs + restricted movement - Urinary/anal incontinence, muscle spasms, + pressure ulcers - Visible disuse atrophy of arms + legs - Possible mental impairment (depending on condition) - If small stature→ none	Probable; acquired (long)	Figure 7.68
WMH-54	MA	M	- Posterior angulation of distal R radius + cloaca - Non-union fracture of distal R ulna	- **Traumatic injury + osteomyelitis**	- Pain, redness, + tenderness - Chronic drainage of fistulae - Abnormal angle of R wrist - Restricted use of R forearm	Probable; acquired (med-long)	Figure 7.69
WMH-71	YA	F	- Asymmetry in size of forearms→ R radius + ulna considerably more slender than L	- **Paralysis**: MMA, acute brachial neuritis, traumatic injury, BPP, CP, poliomyelitis	- Shortening of R upper limb→ might not be visible - Disuse atrophy→ restricted use of R upper limb	Possible; acquired (med-long)	Figure 7.70

Ind. no. (cont'd)	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
WMH-75	OA	M??	- Fusion of L radius + ulna in distal 1/3 of shaft via smooth, compact bone	- **Traumatic injury**	- Supination fixation→ decreased forearm functionality - Abduction + internal rotation of shoulder necessary to use forearm in pronated position→ fatigue	Convincing; acquired (med-long)	Figure 7.71
WMH-89	ADO	US	- Bilateral diffuse woven (+ smoother striated compact bone) throughout skeleton→ mandible, pectoral girdles, ribs, upper/lower limbs, pelvic girdle, + hands/feet	- Leprosy - Osteomyelitis - Treponemal disease - **HOA**	- Secondary HOA associated with severe internal illness - Deep aching or burning pain in affected areas→ restricted movement - Joint swelling - Possible cutaneous involvement	Probable; end of life	Figure 7.72

NB: differential diagnoses in bold is considered the most likely.

Figure 7.67- Ankylosis and kyphosis of the thoracic spine of WMH-10. Produced with kind permission of Nottingham City Museums and Galleries.

Figure 7.68- Gracile femora and increased FNAs of WMH-18. Produced with kind permission of Nottingham City Museums and Galleries.

Figure 7.69- Cloaca on the posterior distal surface of the right radius of WMH-54. Produced with kind permission of Nottingham City Museums and Galleries.

Figure 7.70- Size discrepancy between the left and right radii of WMH-71. Produced with kind permission of Nottingham City Museums and Galleries.

Figure 7.71- Ankylosis of the distal third of the shafts of the left radius and ulna of WMH-75 (supination fixation). Produced with kind permission of Nottingham City Museums and Galleries.

Figure 7.72- PNB formation on the left fourth metacarpal of WMH-89. Produced with kind permission of Nottingham City Museums and Galleries.

7.9.3 Funerary treatment of the individuals with physical impairment

The average grave dimensions for the adult and non-adult burial populations as well as the grave dimensions for the individuals with physical impairment are provided in Table 7.34 and Table 7.35.

Table 7.34- Grave dimensions for the adult burial population and for the adult individuals with physical impairment at Windmill Hill.

	Length (m)	Width (m)
Site average	1.74	0.56
Standard deviation	0.39	0.18
WMH-10	N/A	N/A
WMH-18	1.67	0.47
WMH-54	2.06	1.15
WMH-71	1.97	0.54
WMH-75	1.93	0.48

NB: Underlined values are more than one standard deviation from site average.

Table 7.35- Grave dimensions for the non-adult burial population and for the non-adult individual with physical impairment at Windmill Hill.

	Length (m)	Width (m)
Site average	1.32	0.48
Standard deviation	0.44	0.12
WMH-89	N/A	0.60

The northern and western margins of the cemetery were defined, as these areas were deliberately excavated to confirm that no more burials were present (Bishop and Mordan no date: 88-9). Mechanical earthmoving was performed in the north-west area of the cemetery and no burials were discovered. The southern limits of the cemetery were relatively secure as there was no record of any human bones uncovered when new houses were built in this area (Bishop and Mordan no date: 88-9). The border of the south east corner of the cemetery was impossible to determine as the area was heavily wooded and excavation was not possible (Bishop and Mordan no date: 88-9). Thus, the limits of the cemetery were established, excluding the southeast corner.

In general, there was no clustering of the graves of the individuals with physical impairment besides the overlapping of WMH-71 and WMH-75 who both experienced alterations to their forearms (Figure 7.73). Although these two graves were towards the edge of the cemetery, they were surrounded by many other graves. WMH-89 was buried on the north-western border of the cemetery beyond a ditch that was probably post Anglo-Saxon (Bishop and Mordan no date: 10), while WMH-54 and WMH-10 were buried in the centre of the cemetery. WMH-18 was located on what was potentially the southern border of the

cemetery, but the area further south and east of WMH-18 could not be excavated, thus any marginal burial location cannot be confirmed.

Table 7.36 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

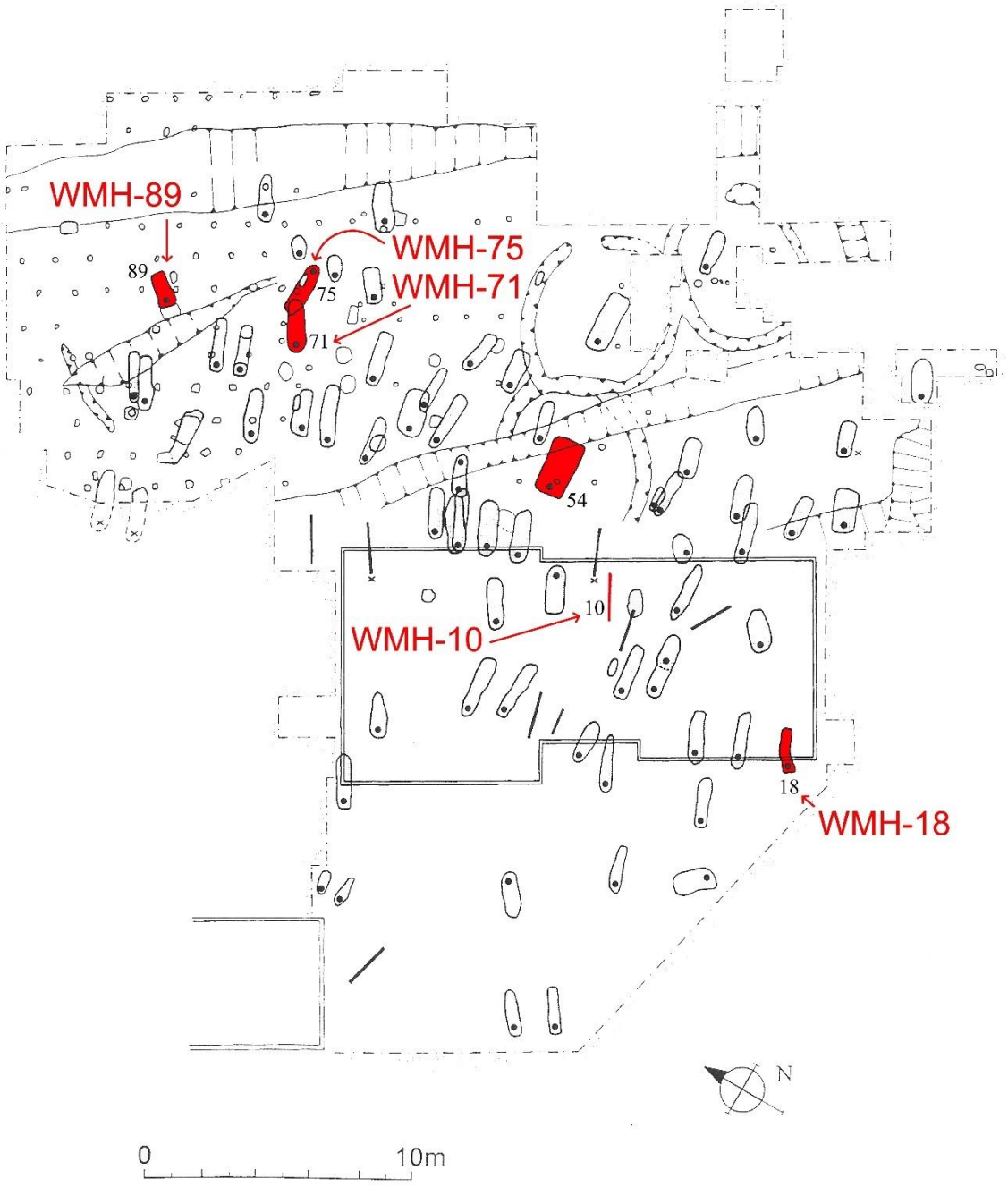

Figure 7.73- Map of the Windmill Hill cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Bishop and Mordan (no date: 69), and modified by current author. © Nottinghamshire County Council.

Table 7.36- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Windmill Hill.

Variable	N	Type	n	% of pop	WMH-10	WMH-18	WMH-54	WMH-71	WMH-75	WMH-89
Grave orientation	73	WNW-ESE	54		N/A	WSW-ENE	WNW-ESE	WNW-ESE	ESE-WNW	WSW-ENE
		W-E	2	89.0						
		WSW-ENE	9							
		ESE-WNW	**5**	**8.2**						
		ENE-WSE	**1**							
		SSE-NNW	**1**	**2.8**						
		SSW-NNE	**1**							
Body orientation	55	Supine	35	63.6	N/A	L side	R side	Supine	Supine	R side
		L side	11	20.0						
		R side	7	12.7						
		Prone	**2**	**3.6**						
Body position	58	Extended	30	51.7	N/A	Flexed	Crouched	Extended	Extended	Crouched
		Flexed	18	31.0						
		Crouched	10	17.2						
Head position	34	R facing	15	44.1	N/A	R facing	R facing	R facing	N/A	R facing
		Forward facing	11	32.4						
		L facing	7	20.6						
		Upright facing	**1**	**2.9**						
Arm position	42	Both bent	18	42.9	N/A	N/A	R straight, L bent	Extended	Extended	R straight, L bent
		R straight, L bent	10	23.8						
		Extended	8	19.0						
		L straight, R bent	6	14.3						

Variable (cont'd)	N	Type	n	% of pop	WMH-10	WMH-18	WMH-54	WMH-71	WMH-75	WMH-89
Leg position	54	Extended	25	46.3	N/A	Bent L	Bent R	Extended	Extended	Bent R
		Bent L	16	29.6						
		Bent R	12	22.2						
		Both bent outwards	**1**	**1.9**						
Stone inclusion	77	Absent	61	79.2	N/A	Present	Absent	Absent	Present	Absent
		Present	16	20.8						
Ring ditch	85	Absent	81	95.3	Absent	Absent	Present	Absent	Absent	Absent
		Present	**4**	**4.7**						
Multiple burial	85	Single	79	92.9	Single	Single	Single	Single	Single	Single
		Contemporary vertical	**4**	**4.7**						
		Vertical sequential	**2**	**2.4**						
Grave goods	85	None	49	57.6	Other[1]	Other[2]	Weapon[3]	Jewellery[4]	None	Other[5]
		Other	23	27.1						
		Jewellery	12	14.1						
		Weapons	**1**	**1.2**						

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population. Grave goods: [1]= ?buckle (9.4%); [2]= ?pin (2.4%); [3]= Spear (1.2%), shield (1.2%), tweezers (1.2%), buckle (9.4%), knife (15.3%), ceramic cup (1.2%); [4]= Brooch x3 (14.7%), beads x87 (16.5%), coin pendant (1.2%), coin (2.4%), ceramic pot x2 (9.4%); [5]= Ceramic pot base (9.4%), knife (15.3%), unidentified bronze object; percentage indicates the % of graves in which these items were found.

7.9.4 Interpretations

The grave drawings and *in situ* excavation photographs for the individuals with physical impairment are provided in Figure 7.74 and Figure 7.75.

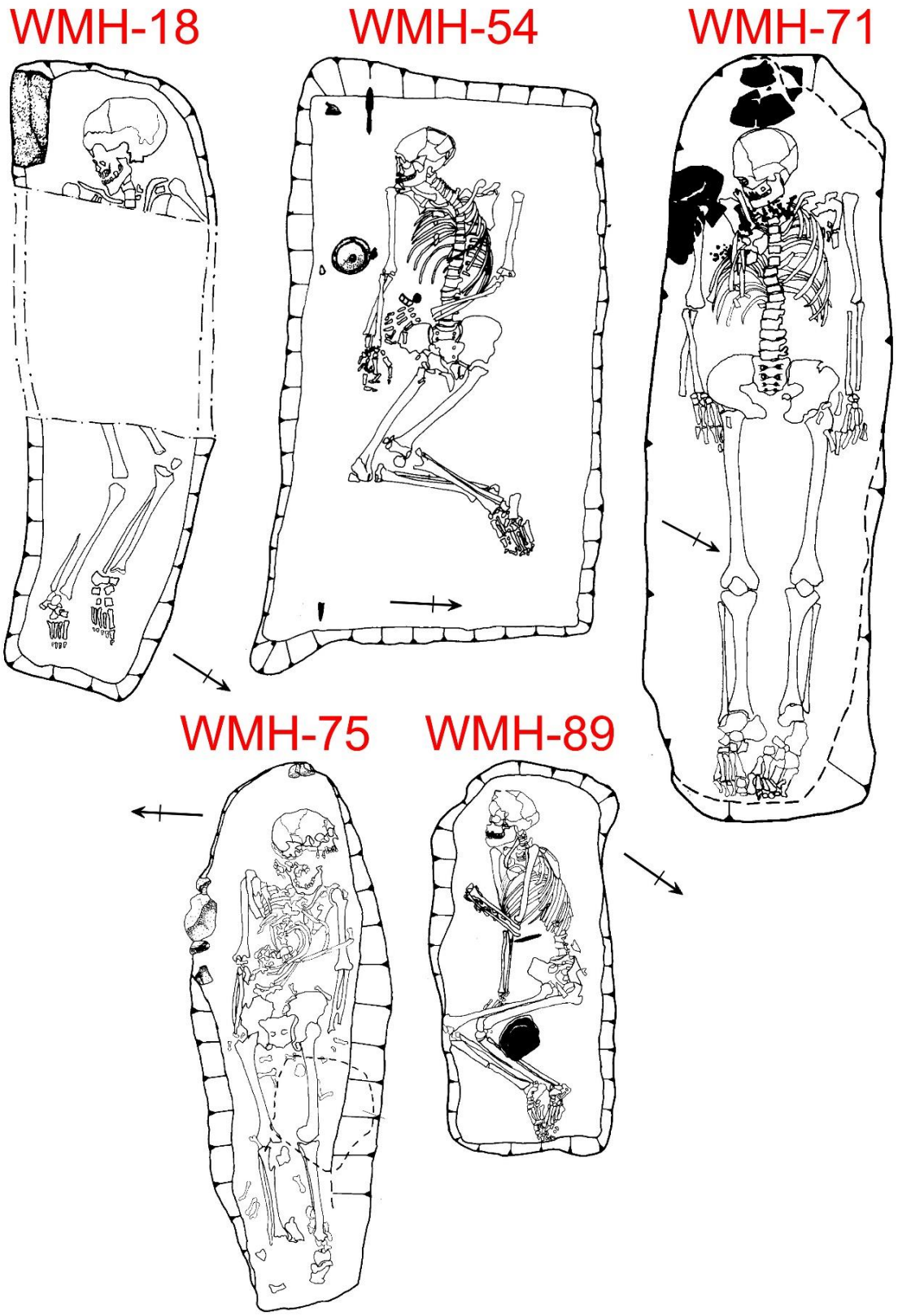

Figure 7.74- Grave drawings for the individuals with physical impairment at Windmill Hill. Source: Bishop and Mordan (no date), and modified by current author. © Nottinghamshire County Council.

Figure 7.75- In situ excavation photographs for the individuals with physical impairment at Windmill Hill. Source: Unpublished archive held by Nottinghamshire County Council.

As WMH-10, a middle adult individual who was possibly female with tuberculous kyphosis, was excavated by builders rather than archaeologists, there is no record of burial treatment. The remainder of the individuals with physical impairment will be discussed in more detail below.

7.9.4.1 Windmill Hill 18

WMH-18 (young adult female) probably had paraplegia or quadriplegia. Paralysis of the legs and possibly the arms probably rendered her visually distinctive, prevented normal locomotion, restricted normal participation in social and economic activities, and may have necessitated care to ensure survival (Section 10.2.2.9). WMH-18 was buried on her left side (20.0%) in a flexed position (31.0%), which was relatively common at Windmill Hill (Figure 7.74 and Figure 7.75). She was buried with a possible iron pin.

There was one large stone to the right of her skull which may have been part of stone lining around the grave, although disturbance prevents confirmation of this. Stone inclusions were relatively common at Windmill Hill (20.8%), but evidence of stone lining was only found in two other graves, although neither case is exceptionally convincing. If WMH-18 was buried in a stone-lined grave, this would have required more effort on the part of those burying her. Stone-lining could have served to create an impression during the actual funeral, or to keep the body of the deceased safe in death. This is particularly interesting as WMH-18 may have been considered vulnerable in life, given that she probably needed care and support from family and community members, and perhaps this vulnerability required extra measures to protect her body in death.

7.9.4.2 Windmill Hill 54

WMH-54 (middle adult male) experienced a fracture of the right forearm and subsequent osteomyelitis of the radius. Osteomyelitis can result in chronic pain, swelling, tenderness, and persistent drainage through fistulae (Waldvogel et al. 1970; Panteli and Giannoudis 2017). So, although the injury was probably not visible to others, it is likely that WMH-54 was restricted functionally. WMH-54 was definitely distinguished from the majority of the burial population in terms of funerary treatment (Figure 7.74 and Figure 7.75). He was buried in a rectangular, neatly cut grave that was more than one standard deviation wider than the site average, and was one of four individuals in the cemetery to be buried within a ring-ditch with a probable barrow mound over his grave (4.7%). The construction of a barrow mound and resulting ring ditch would have required the involvement of more people and more time and effort on the part of those performing the burial: the grave of WMH-54 was constructed, his body and grave goods were placed

and positioned inside, a circular ditch around the grave was dug, and the soil from the ditch was thrown on top of the grave to create a barrow mound. The barrow mound over WMH-54 would also have been very visible and distinctive in the cemetery landscape, suggesting that whoever buried WMH-54 wanted him to remain prominent in the social memory and living landscape of the community. In addition, Bishop and Mordan (no date: 66) suggest that it is possible that WMH-54's grave actually served as the initial focal burial at the Windmill Hill cemetery, and that the rest of the cemetery spread out around him. All of these factors suggest that WMH-54 was well-respected and of elevated social importance within his community.

WMH-54 was also the only individual buried with any sort of weaponry (spear and shield) at Windmill Hill. Many EAS cemeteries contain several individuals buried with weaponry, and it is unusual that Windmill Hill had so few weapons burials (Table 7.37). Therefore, the inclusion of weaponry in the grave of an individual with physical impairment at a cemetery where weaponry was exceptionally rare is noteworthy.

Table 7.37- Summary of weapon frequency in all nine EAS cemeteries analysed.

Site	% with spear	% with shield	% with sword	% with seax
Apple Down	12.8	2.4	0.8	0.8
Butler's Field	11.3	5.0	-	1.8
Edix Hill	14.2	10.8	-	-
Finglesham	10.8	1.8	0.9	1.8
Norton East Mill	8.6	4.3	-	0.9
St. Anne's Hill	9.9	3.1	1.6	0.5
Watchfield	9.5	14.3	2.4	-
Windmill Hill	**1.2**	**1.2**	**-**	**-**
Worthy Park	16.3	8.7	1.0	1.0

It is possible that WMH-54 was a warrior in life, who was injured in adulthood (lack of shortening of the forearm bones indicates that the fracture did not occur in childhood), and thus prevented from further participation as a warrior. It is also similarly likely that WMH-54 was not a warrior in life. Instead the inclusion of a spear and shield may have symbolised his or his family's social or political importance (Sections 3.2.6.3.1 and 7.2.4.5), an idea that is supported by the burial of WMH-54 under a highly visible barrow mound requiring increased time and effort to construct.

Therefore, despite his physical impairment, WMH-54 was afforded funerary treatment indicative of respect from his community. The symbolic (or perhaps realistic) associations drawn between WMH-54 and an ideological warrior status, along with the placement of his grave under a large, visible barrow mound, suggest that those who buried WMH-54 were intent on honouring WMH-54 and reflecting his social significance in death.

7.9.4.3 Windmill Hill 71

WMH-71 (young adult female) had an atrophied right forearm which indicates an underlying weakness that may have hindered normal participation in everyday activities. WMH-71 was buried supine (63.6%) and extended (51.7%) (Figure 7.74 and Figure 7.75), with a relatively rich assemblage of grave goods: three brooches (14.7%), 87 beads (16.5%), two ceramic pots (9.4%), and a very worn Roman coin which had been pierced and included as a pendant on a necklace (2.4%).

At Windmill Hill, eight relatively complete pots were identified: five were in the graves of adult women, and three were in the graves of non-adults. As at Edix Hill, it seems that the provision of a complete pot in burial was associated with women and children, and may have symbolised the relationship between females and non-adults (Section 7.4.4.1). The fact that WMH-71 was buried with a pot and jewellery, which is commonly associated with the female gender in EAS cemeteries (Lucy 1998; Stoodley 1999), suggests the intention to reflect WMH-71's identity as a woman in death. In addition, WMH-71 was buried with a curated Roman coin that had been altered to function as a necklace pendant. The wearing down of the coin and its transformation into a pendant suggest that this object was personally important to the individuals who owned it, and it may have served as a family heirloom that was passed down through generations. Therefore, the removal of such a mnemonic object from circulation in daily life for the permanent inclusion in WMH-71's grave has undertones of a positive relationship between WMH-71 and those performing her burial. Thus, despite WMH-71's potential functional restrictions that may have curtailed her participation in daily activities, she was still afforded a normative, gendered burial, and a personally meaningful object was considered appropriate for inclusion in her grave.

7.9.4.4 Windmill Hill 75

WMH-75 (older adult who was possibly male) had a supination fixation of the left forearm. This alteration would have resulted in decreased functionality of the forearm, tiring adaptive arm movements, and difficulty performing everyday tasks (Simmons et al. 1983; Hankins et al. 2006). WMH-75 was buried extended (51.7%) and supine (63.6%) (Figure 7.74 and Figure 7.75) without grave goods (57.6%). There were several small stones around the body that may have been indicative of a stone lining: only five small stones were identified, but they do appear to follow the cut of the grave. It is possible that there were originally more stones in the lining of this grave that were disturbed after burial. While this is not possible to confirm, it is possible that WMH-75 was buried in a stone-lined grave that would have required increased effort to construct by those performing the burial.

WMH-75 was buried in an E-W orientation which occurred in only 8.2% of the burial population, which was probably meant to distinguish this individual in death. The five other individuals who received this non-normative burial treatment consisted of an adult female, a male, another possible male, and two non-adults (one infant and one foetus) who did not show skeletal evidence of physical impairment. If E-W grave orientation signified deviancy at Windmill Hill, various motivations should be considered (see Section 7.3.4.5). As both an infant and a foetus (who died prematurely and around the time of birth) were buried in this orientation, it is possible that this funerary treatment was associated with a bad or suspicious death that called for restorative measures to be taken. Or perhaps WMH-75's abnormal movements and limited ability to participate were perceived negatively by his community, and therefore it was necessary to reflect his otherness in death. However, it should be noted that none of the other individuals with physical impairment at Windmill Hill were afforded E-W orientation (especially WMH-18 who probably required care from family or community members), nor was there any evidence of skeletal impairment in the other individuals who were buried in the E-W orientation. Therefore, while physical impairment may have influenced the need to differentiate WMH-75 in death by his grave orientation, it is likely that there were other socially specific factors influencing this burial treatment as well.

7.9.4.5 Windmill Hill 89

WMH-89 (unsexed adolescent) had bilateral periostitis throughout the axial and appendicular skeleton which was probably caused by HOA. These pathological alterations probably resulted in bone and joint pain, swelling, and restricted movement (Nahar et al. 2007), which would have limited normal participation. WMH-89 may have also experienced the consequences of the pathological condition causing the HOA (most commonly cyanotic heart disease or pulmonary infections or carcinomas) (Fennell and Trinkaus 1997; Martínez-Lavín 1997). WMH-89 was afforded normative funerary treatment (Figure 7.74 and Figure 7.75) and was buried with a ceramic pot (9.4%), which occurred in seven other individuals, all of whom were adult females or non-adults (Section 7.9.4.3). The inclusion of this pot with WMH-89 (an unsexed adolescent) therefore suggests that those burying this individual felt it was important to signal their inclusion in either the female demographic, the non-adult demographic, or both.

WMH-89 was buried on the north-eastern margin of the cemetery. It should be noted that the ditch that appears to separate WMH-89 from the rest of the cemetery was post Anglo-Saxon (Bishop and Mordan no date: 10). Because WMH-89 was physically impaired and placed on the margin, ability status should be considered as a potential influencer of this burial location. However, other individuals with physical impairment at Windmill Hill were buried in more central locations, and the other individuals on the margins of the cemetery did not show evidence of skeletal physical impairment. Therefore, as with grave orientation (Section 7.9.4.4), while physical impairment may have influenced the appropriateness of marginal burial, ability status was probably one of many social factors affecting this type of burial.

7.9.4.6 Summary

It is significant that two individuals who were functionally impaired and may not have been able to fully participate in social or economic activities were given funerary treatment indicative of care and respect in death: WMH-54 was buried in a ring ditch under a barrow mound with a spear and shield, and WMH-71 was buried with a gendered grave good assemblage and a curated Roman coin that may have been a family heirloom. This indicates a positive relationship between

these individuals and those burying them, and suggests that their ability status was not an element of their self-identity requiring reflection in death. On the other hand, WMH-75 was buried at a non-normative orientation and WMH-89 was buried on the margins of the cemetery. While these types of funerary treatment may not have had negative or deviant connotations, the possibility that ability status influenced this type of treatment should not be discounted. Therefore, as inferred from the mortuary treatment of the individuals with physical impairment, it appears that there were no overtly negative attitudes towards individuals who may have been functionally restricted at Windmill Hill. Instead, as with the rest of the burial population, it seems likely that these individuals occupied different social statuses, constructed various self and social identities, and formed different types of relationships with their family and community members.

7.10 Worthy Park

7.10.1 General funerary treatment

The funerary treatment variables which were recorded for the Worthy Park cemetery (mid-5th to mid-7th centuries) based on information provided in Hawkes and Grainger (2003a) include grave dimensions, orientation, and location, body orientation and position, head/arm/leg position, and the presence of coffins, stones, marker posts, other individuals (multiple burial), and grave goods.

7.10.1.1 Grave orientation

A majority of the graves were oriented generally W-E (WSW-ENE and WNW-ESE orientations included) (67.0%), but burial in the general S-N orientation (SSE-NNW and SSW-NNE orientations included) was also common (26.8%). Burial in the general N-S (4.2%) and general E-W orientations (2.1%) is considered non-normative. Only females were buried in the general N-S orientation while only non-adults were buried in the general E-W orientation (Appendix 2: Section 9).

7.10.1.2 Body and limb positioning

A majority of the individuals were buried supine (86.6%) and extended (84.3%), and burial in the flexed position was relatively rare (12.0%). Burial in the right (6.1%), left (4.9%), and prone (2.4%) orientations, and in the crouched position (3.6%) is considered non-normative. Only females were buried in the flexed position, while only non-adults were buried on the left side (Appendix 2: Section 9). It was more common for non-adults to be buried in the crouched position than adults (Appendix 2: Section 9).

7.10.1.3 Structures and furniture

Ten individuals were buried with evidence of coffin use (9.6%). The evidence ranged from very convincing evidence (body outlined in brown traces with iron fittings and staples) to less convincing evidence (possible traces of wood around the body of the individual) (Grainger 2003). Earthen mound “pillows” were found under the skulls of WP-38 and WP-49 (1.9%), and a single marker post was found above the skull of WP-22.

Stones were found in association with five individuals (4.8%). Four of these individuals were surrounded by flint stones that were used to line the coffins within which the bodies were placed. WP-8 was buried with a line of flints to the right of the lower legs, which was probably meant to separate this grave from that of Grave 7, which Grave 8 had cut and exposed.

7.10.1.4 Multiple burial

Eighteen individuals (17.3% of burial population) were part of eight multiple burials. All eight of the multiple burials included at least one adult and one non-adult. The timing (i.e., contemporary or sequential) of some of the multiple burials is difficult to discern and was not reported on in detail in the monograph. There are examples of vertical sequential burial without disturbance of the original remains, complete disturbance of the original burial for the insertion of the secondary burial, and several probable contemporary horizontal burials containing the remains of an adult and an infant. The most interesting multiple burial (Grave 26) contains a female individual with the bones of a foetus between her upper legs. As the legs of the foetus were still inside the pelvic canal, this has

been considered a possible case of post-mortem foetal extrusion (Hawkes and Wells 1975) (Figure 7.76).

Figure 7.76- Possible case of post-mortem foetal extrusion in Grave 26 at Worthy Park. Source: Hawkes and Wells (1975: 49). © Oxford University School of Archaeology.

7.10.1.5 Grave goods

Table 7.38 provides a summary of the grave good types and frequencies at Worthy Park.

Table 7.38- Grave good types and frequencies for the Worthy Park cemetery.

Grave good	# in cemetery	# of graves	% of all graves
None	-	35	33.7
Weaponry			
Spear	17	17	16.3
Shield	9	9	8.7
Ferrule	3	3	2.9
Seax	1	1	1.0
Sword	1	1	1.0
Scabbard	1	1	1.0
Dress accessories and jewellery			
Buckle	25	25	24.0
Beads	426	13	12.5
Pin	12	12	11.5
Belt plate	7	7	6.7
Brooch	11	7	6.7
Pendant	3	3	2.9
Finger ring	4	2	1.9
Tools and personal equipment			
Knife	45	44	42.3
Chatelaine	7	7	6.7
Tweezers	7	7	6.7
Purse/bag/pouch	5	5	4.8
Comb	2	2	1.9
Key	2	2	1.9
Latchlifter	1	1	1.0
Open work disc	1	1	1.0
Toilet implement	1	1	1.0
Vessels and containers			
Wooden vessel	6	6	5.8
Ceramic vessel	4	4	3.8
Copper vessel	1	1	1.0
Coffin fittings	1	1	1.0
Other			
Coins	19	6	5.8
Nail	2	2	1.9
Bone object	2	2	1.9
Fossil	1	1	1.0
Copper tube	1	1	1.0
Charcoal	1	1	1.0
Glass fragment	1	1	1.0

7.10.2 Palaeopathological analysis

Five individuals were identified as potentially physically impaired (4.8% of burial population). Summaries of the pathological changes, differential diagnoses considered, and functional impacts are provided in Table 7.39. Refer to Appendix 3: Section 10.2 for detailed differential diagnoses for each individual.

Table 7.39- Summary of the palaeopathological analysis of the individuals with physical impairment from Worthy Park.

Ind. no.	Age	Sex	Brief description of pathological changes	Differential diagnoses considered	Functional impact	Evidence + duration of impairment	Figure no.
WP-2	OA	F	- Anterior collapse of L3 - Ankylosis of L3 + L4	- TB - **Traumatic injury**	- Kyphosis + right-side angulation of lumbar spine - Forward-facing gaze restricted - Pain + fatigue - Hunched over appearance→ abnormal gait	Probable; acquired (med-long)	Figure 7.77
WP-14	Adult	M	- Severe malalignment of R forearm→ distal 2/3 radius + ulna displaced medially - R forearm shorter than L	- **Traumatic injury**	- Visually distinctive R forearm - Restricted use of R forearm due to abnormal angulation	Convincing; acquired (med-long)	Figure 7.78
WP-39	MA	F	- Fusion + deformation of T1-T6 (not examined by current author)	- Osteomyelitis - Brucellosis - Metastatic carcinoma - **Tuberculosis**	- Gibbus deformity - Disruption of spinal cord→ paraparesis/paraplegia, urinary/anal incontinence, pain, sensory impairment, + abnormal gait - General symptoms: weakness, fatigue, weight loss, fever, etc.	Convincing; acquired (med-long)	Figure 7.79
WP-45	YA	M	- Asymmetry in size of R/L upper limbs→ L upper limb long bones more slender than R	- **Paralysis**: traumatic injury, CVA, BPP, neuromuscular disease	- Atrophied L upper limb - Restricted use of L upper limb	Probable; acquired (med-long)	Figure 7.80
WP-73	MA	M	- Four oval perforating lesions with rounded edges on distal end of L MT5	- **Osteomyelitis (ulcer, gangrene, diabetes)**	- Localised inflammation, discharging fistula, + pain - Difficulty with ambulation→ abnormal gait	Probable; acquired (med-long)	Figure 7.81

NB: differential diagnoses in **bold** are considered the most likely

Figure 7.77- Anterior collapse and ankylosis of L3 and L4 of WP-2 and subsequent kyphosis of the lumbar spine. Produced with kind permission of The Duckworth Laboratory.

Figure 7.78- Severe medial angulation of the distal half of the right forearm of WP-14. Produced with kind permission of The Duckworth Laboratory.

Figure 7.79- In situ excavation photograph of WP-39 suggesting kyphotic spine. Source: Hawkes and Grainger (2003b: 146). © Oxford University School of Archaeology.

Figure 7.80- Asymmetry in size between the right and left radii of WP-45. Produced with kind permission of The Duckworth Laboratory.

Figure 7.81- Oval lesion with rounded edges on the plantar surface of the left MT5 of WP-73. Produced with kind permission of The Duckworth Laboratory.

7.10.3 Funerary treatment of the individuals with physical impairment

The average grave dimensions for the adult burial population as well as the dimensions of the graves of the adult individuals with physical impairment are provided in Table 7.40.

Table 7.40- Grave dimensions for the adult burial population and for the adult individuals with physical impairment at Worthy Park.

	Length (m)	Width (m)
Site average	1.92	0.74
Standard deviation	0.31	0.16
WP-2	1.62	0.68
WP-14	2.16	0.65
WP-39	2.05	0.67
WP-45	1.90	0.71
WP-73	1.88	0.59

While the northern boundary of the cemetery was relatively well-defined, the southern, western, and eastern borders were not, due to lack of funding and because excavation of the remainder of the cemetery would have required the removal of beehives and large trees. It is estimated that only about a half of the cemetery was excavated, and that the founder burials of the cemetery lie unexcavated to the west (Hawkes 2003). None of the individuals with physical impairment were buried in isolation, and WP-2, WP-14, WP-39, and WP-45 were buried quite close to one another (Figure 7.82). The only individual with physical impairment buried outside of this area was WP-73.

Table 7.41 provides a summary of the funerary treatment of the entire burial population and the funerary treatment of the individuals with physical impairment.

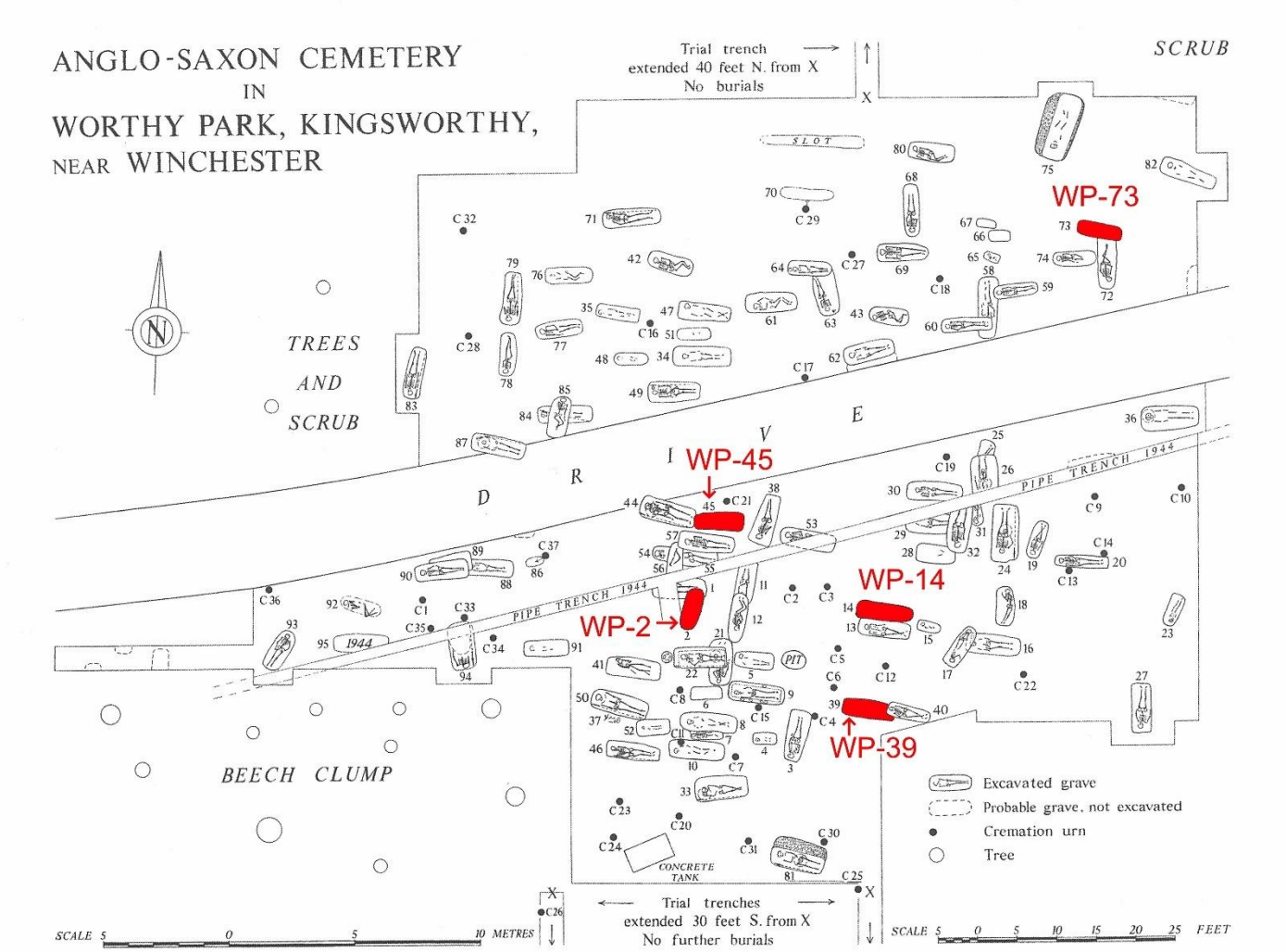

Figure 7.82- Map of the Worthy Park cemetery demonstrating the location of the individuals with physical impairment (in red). Source: Hawkes (2003: 8), and modified by current author. © Oxford University School of Archaeology.

Table 7.41- Comparison of the funerary treatment of the individuals with physical impairment with the funerary treatment of the entire burial population at Worthy Park.

Variable	N	Type	n	% of pop	WP-2	WP-14	WP-39	WP-45	WP-73
Grave orientation	97	WSW-ENE	25		SSW	WNW	WNW	WSW	WNW
		W-E	4	67.0					
		WNW-ESE	36						
		SSE-NNW	6						
		S-N	7	26.8					
		SSW-NNE	13						
		NNE-SSW	**2**	**4.2**					
		N-S	**2**						
		ENE-WSW	**2**	**2.1**					
Body orientation	82	Supine	71	86.6	Supine	Supine	Supine	Supine	Supine
		R side	**5**	**6.1**					
		L side	**4**	**4.9**					
		Prone	**2**	**2.4**					
Body position	83	Extended	70	84.3	Extended	Extended	Extended	Extended	Extended
		Flexed	10	12.0					
		Crouched	**3**	**3.6**					
Head position	69	Forward facing	26	37.7	Upright facing	R facing	L facing	Forward facing	R facing
		R facing	23	33.3					
		L facing	11	15.9					
		Upright facing	7	10.1					
		Other	**2**	**2.9**					
Arm position	67	Extended	24	35.8	Both bent	Extended	Extended	Extended	Extended
		Both bent	16	23.9					
		R straight, L bent	15	22.4					
		R bent, L straight	12	17.9					

Variable (cont'd)	N	Type	n	% of pop	WP-2	WP-14	WP-39	WP-45	WP-73
Leg position	79	Extended	59	74.7	Both legs bent inwards (other)	Extended	Extended	Extended	Extended
		Bent L	8	10.1					
		Bent R	**6**	**7.6**					
		R bent, L straight	**4**	**5.1**					
		Other	**2**	**2.5**					
Multiple burial	104	Single	86	82.7	Single	Single	Single	Single	Single
		Contemporary horizontal	**6**	**5.8**					
		Vertical sequential	**7**	**6.7**					
		Contemporary horizontal + vertical sequential	**3**	**2.9**					
		Unclear	**2**	**1.9**					
Coffin use	104	Absent	94	90.4	Absent	Absent	Absent	Absent	Absent
		Present	**10**	**9.6**					
Stone inclusion	104	Absent	99	95.2	Absent	Absent	Absent	Absent	Absent
		Present	**5**	**4.8**					
Marker post	104	Absent	103	99.0	Absent	Absent	Absent	Absent	Absent
		Present	**1**	**1.0**					
Head pillow	104	Absent	102	98.1	Absent	Absent	Absent	Absent	Absent
		Present	**2**	**1.9**					
Grave goods	104	None	35	33.7	Other[1]	Other[2]	Other[3]	Weapon[4]	None
		Other	34	32.7					
		Weapons	19	18.3					
		Jewellery	16	15.4					

NB: N= number of individuals for which the variable could be recorded; n= number of individuals with corresponding variable type; **bold** type represents categories that are present in under 10% of the burial population; green shading represents when funerary treatment of the individual with physical impairment fell into a category that represented less than 10% of the entire burial population. Grave goods: [1]= pin (12.4%); [2]= knife (54.6%); [3]= pin (12.4%), tweezers suspended from ring (7.2%), knife (54.6%); [4]= spear (16.3%), knife (54.6%); percentage indicates the % of graves in which these items were found.

7.10.4 Interpretations

The grave drawings for the individuals with physical impairment are provided in Figure 7.83.

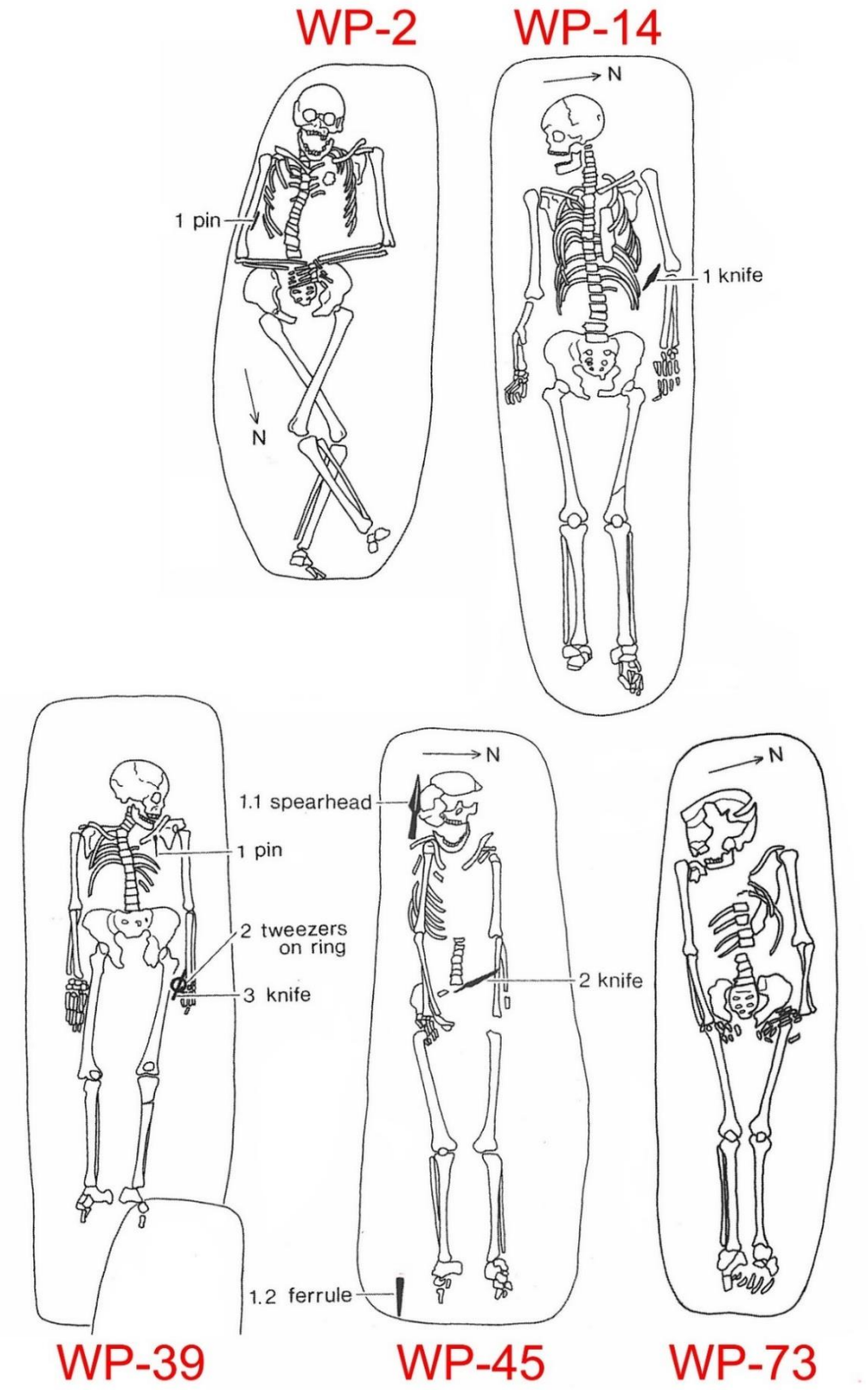

Figure 7.83- Grave drawings for the individuals with physical impairment at Worthy Park. Source: Hawkes and Grainger (2003b), and modified by current author. © Oxford University School of Archaeology.

7.10.4.1 Worthy Park 14, Worthy Park 39, and Worthy Park 73

WP-14 (adult male) had a mal-aligned fracture of the right forearm which probably caused reduced rotation and may have limited full use of the right arm due to the abnormal position of the wrist and hand. WP-14 was afforded normative funerary treatment (Figure 7.83).

WP-39 (middle adult female) had tuberculous kyphosis. The clinical symptoms of kyphosis of this degree are discussed in Section 7.3.4.3, but probably would have negatively affected normal participation in social and economic activities. WP-39 was afforded normative funerary treatment (Figure 7.83) and was buried with a set of tweezers (6.7%). While tweezers were relatively rare in this cemetery, they are common in EAS cemeteries and probably should not be considered non-normative

WP-73 (middle adult male) had osteomyelitis of the left fifth metatarsal which probably resulted in localised inflammation, a discharging fistula, and pain, all of which may have compromised normal ambulation (Tennvall and Apelqvist 2000; Ashman et al. 2001; Price 2004). WP-73 was afforded normative funerary treatment (Figure 7.83). The remaining individuals with physical impairment will be discussed in more detail below.

7.10.4.2 Worthy Park 2

WP-2 (older adult female) had lumbar kyphosis probably due to a traumatic injury. This probably would have given WP-2 a hunched over appearance, an abnormal gait, and her forward facing gaze would have been restricted, which probably affected everyday social interactions (Takemitsu et al. 1988; Roussouly and Nnadi 2010). WP-2 was buried with both legs bent inwards, a position which was unique in this cemetery (Figure 7.83). To arrange the body with both legs turned inwards would probably have taken some effort by those burying the individual, as it is difficult in life to position the legs in this way. Hawkes (2003b: 12) argues that WP-2 was clearly “squeezed” into a grave that was too small for her, as her right arm was “jammed up against” the side of the grave, and her feet were “hard against” the end of the grave. If we assume that the motivation for the positioning of WP-2’s body was to fit her into a grave that was too small for her, this might be considered evidence of negative burial treatment: although WP-2’s

body did not fit naturally into the grave, it was not deemed necessary by those burying her to enlarge the grave, or to dig a new grave more appropriate in size. If the bending of both legs was an attempt to fit WP-2 into a grave that was too short, it is unclear why those burying her did not simply bend both legs to the right or left, parallel to one another. This would have required less effort as the legs can be positioned this way easily, and burial with both legs bent to the right (7.6%) and left (10.1%) was infrequent, but in use at Worthy Park.

Although rare, there are instances of Anglo-Saxon post-burial manipulation of corpses, which tended to occur after the body had decomposed significantly, and generally consisted of the rearrangement of the skull or limbs (Klevnäs 2011; but see Aspöck 2015). At Winnall, Hampshire, only a few instances of ancient disturbance were recorded by the original excavators, and there was no evidence of ancient intervention pits, however, Aspöck (2011; 2015) demonstrates that a large number of the graves were re-opened for body manipulation, deposition of objects, and for reasons that are not visible archaeologically. It is therefore possible that the grave of WP-2 was re-opened, and the legs rearranged. This could have occurred relatively soon after burial: some of the flesh would have decomposed to make this specific positioning of the legs easier, but both legs remain articulated (the fibulae and foot bones were in the correct anatomical positions).

An archaeothanatological approach should also be considered, which takes into account the effects of decomposition and natural processes on body position (Duday et al. 1962; Appleby 2016). As the soft tissue decomposes, gravity acts on the surrounding bones and soil to fill in the resulting empty voids (Duday et al. 1962). In the case of WP-2, if she was buried with both feet on the ground and her knees projecting vertically out of the grave, it is possible that the soft tissue of the legs decomposed, causing the knees to fall inward, resulting in the position observed *in situ*. If this were the case, the placement of the knees vertically projecting from the grave was unique at Worthy Park, and WP-2 was still distinguished with regards to her leg positioning.

While post-burial manipulation of the corpse or movement due to decomposition remain possibilities, it is plausible that those burying WP-2 purposefully positioned her this way, which may have served to differentiate this individual in death. It is possible that WP-2's visible distinctness, disrupted social

interactions, and probable functional restrictions may have rendered her socially "other" or "different", and this otherness required differential mortuary treatment. However, because the other individuals with physical impairment were not buried in this way (particularly WP-39 who had similar physical alterations to WP-2), it is possible that other social or personal factors influenced this non-normative leg positioning.

7.10.4.3 Worthy Park 45

WP-45 (young adult male) had atrophy of the left upper limb, suggestive of paralysis or an underlying weakness in the associated muscles. This probably restricted use of the left arm, which may have limited full participation in everyday activities. A spearhead (16.3%) and ferrule (2.9%) were found in association with WP-45, indicating that he was originally buried with a spear. As mentioned previously, the provision of a weapon in death did not necessarily mean that an individual was a warrior in life (Sections 3.2.6.3.1 and 7.2.4.5). While it is possible that WP-45 participated as a warrior, it seems more likely that weakness of the left arm would have prevented effective fighting. Therefore, it is more probable that a spear was included with WP-45 as a demonstration of his or his family's political or social status, to symbolically link this man to the ideological warrior status that might have been unavailable to him in life, or to emphasise WP-45's authority and power despite his functional restrictions. The inclusion of weaponry in WP-45's grave suggests that those burying him were concerned with his projected post-mortem identity despite his physical impairment.

7.10.4.4 Clustered burial

All of the individuals with physical impairment (excluding WP-73 who was the least visually distinctive) were buried in the same area of the cemetery. While they were not tightly clustered, they certainly were close together, and it seems unlikely that the four individuals (two with abnormalities of the upper limb and two with abnormalities of the spine) would be buried so close together at random. In addition, it is interesting to note that Grave 18 (contemporary double burial of a young adult female and an infant), Grave 21 (contemporary double burial of an older adult female and a new-born infant/full-term foetus), and Grave 26 (a

probable case of post-mortem foetal extrusion including a middle adult female and a foetus) (Hawkes and Wells 1975), were also buried in this area (Figure 7.84). Although it is not possible to prove within the scope of this project, it is possible that these graves contain children and their mothers who died in or around childbirth.

Adjacency of individuals with physical impairment and double burials containing females and non-adults occurred at Watchfield (Section 7.8.4.4) and Great Chesterford, Essex (Zakrzewski et al. 2017) (Section 7.8.4.4). Scull et al. (1992) argue that the clustered area at Watchfield was reserved for the more vulnerable members of the community, while Zakrzewski et al. (2017) argue that the clustering of the individuals at Great Chesterford reiterates these individuals' liminal statuses in life. Perhaps something similar was happening at Worthy Park with the establishment of a burial zone for those vulnerable or liminal individuals. Pregnant women might classify as liminal: while they are not sick, they are also not in their normal state. It should be noted, however, that upon analysis of the demographic distribution of this dense area of burial, there were certainly other types of individuals present. There were ten adult males, 12 adult females, and 11 non-adults in addition to the four individuals with physical impairment (two males, two females) and the three females and three non-adults included in contemporary double burials (Figure 7.84). Therefore, while this area of the cemetery may have been considered more appropriate for the burial of socially liminal or physically vulnerable individuals, other individuals could be buried here as well, and it is unlikely that *all* of the individuals buried in this general cluster were considered vulnerable or liminal in some way. It is possible that this area of the cemetery developed as a "safe place" for the burial of individuals with liminal identities, and, with time, was transformed into a different mortuary space by the inclusion of further burials, particularly as it appears that many of the male graves cut earlier burials (e.g. Grave 22, 32, 40, and 57).

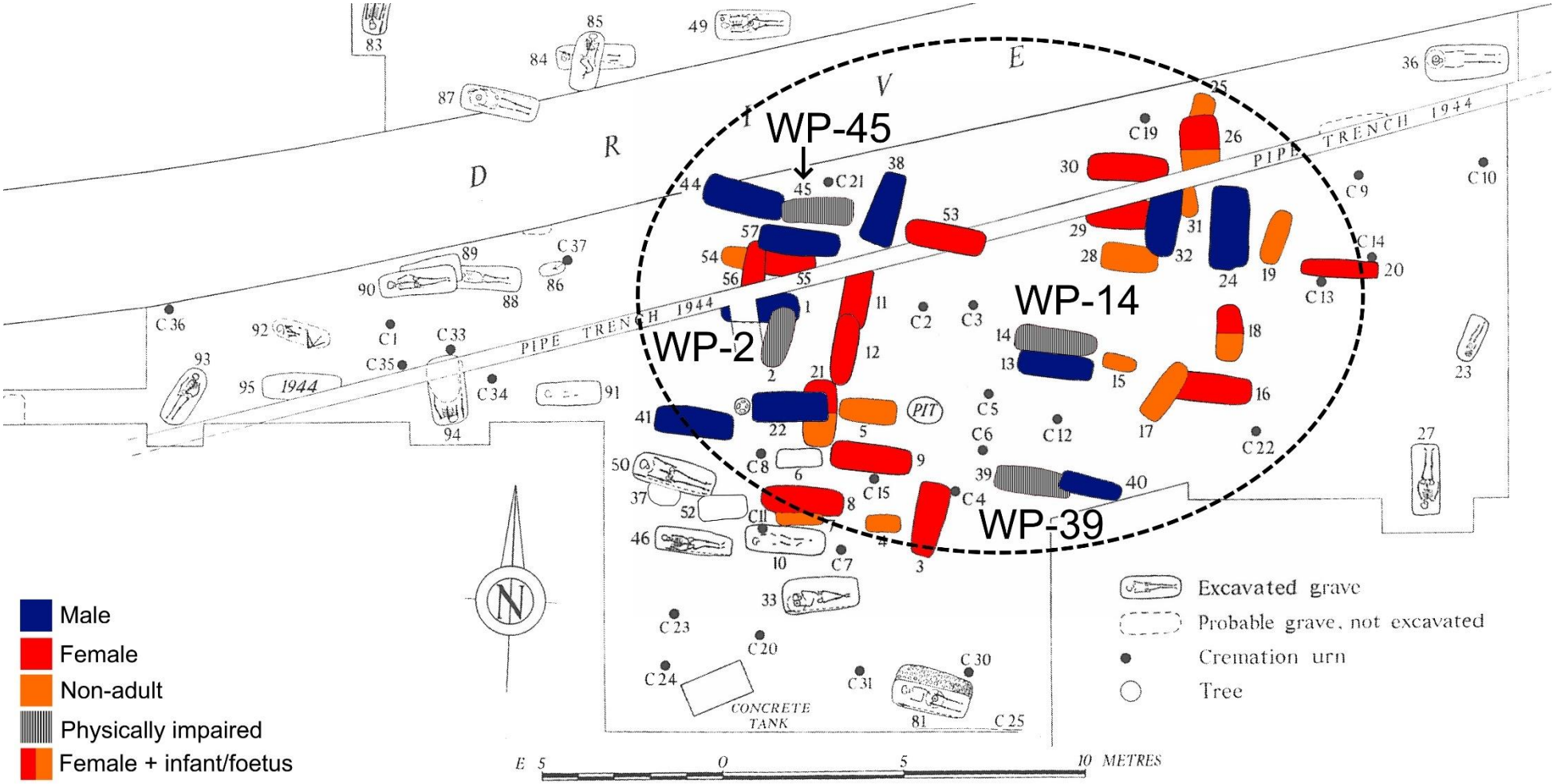

Figure 7.84- Detail of the cluster of individuals with physical impairment at Worthy Park cemetery, also demonstrating the location of males, females, non-adults, and double burials containing females and non-adults. Source: Hawkes (2003: 8), and modified by current author. © Oxford University School of Archaeology.

7.10.4.5 Summary

In summary, as at the other EAS cemeteries, the funerary treatment of the individuals with physical impairment at Worthy Park was variable. There are possible negative connotations associated with the placement of WP-2 into a grave that was too small for her, and she was distinguished in death by non-normative leg positioning. On the other hand, three of the individuals with physical impairment were buried normatively, while WP-45 was buried with a symbolically significant spear, suggestive of a positive relationship between him and those burying him.

Finally, four of the five individuals with physical impairment, along with three women who potentially died while pregnant or in/soon after childbirth, are buried in the same area of the cemetery. This cluster is in the centre of the cemetery, suggesting there was no need for marginality or isolation of individuals with physical impairment, which is more indicative of social inclusion. Perhaps burial in a cluster was meant to provide safety for these physically vulnerable or socially liminal individuals in death, which would suggest that there were no pervasive negative attitudes about physical impairment or disability in the Worthy Park community.

7.11 Summary of physical impairment in the EAS period

Of the 1,261 EAS individuals, 40 individuals with potential physical impairment were identified from the nine sites (3.2%). Of the 40 individuals with physical impairment, 36 (90.0%) were adult and four (10.0%) were non-adult. Of the 32 individuals with physical impairment for which sex could be assessed, 19 (59.4%) were male and 13 (40.6%) were female. Therefore, 3.6% of EAS females were physically impaired while 5.7% of EAS males were physically impaired.

Table 7.42 summarises the distribution of skeletal regions affected by physical impairment and Table 7.43 summarises the types of disease and conditions encountered in the EAS sample. Many individuals were affected in more than one region and by more than one condition/disease. Physical impairment involving the upper limb was the most common (45.0%) followed by physical impairment involving the lower limb (42.5%). Trauma was by far the most

common cause of physical impairment (37.5%) followed by joint fixation (15.0%), which in many cases was probably caused by trauma and tuberculosis (15.0%).

Table 7.42- Distribution of the skeletal regions affected by physical impairment in the EAS sample.

Region affected	N	%
Upper limb	18	45.0
Lower limb	17	42.5
Thorax	10	25.0
Skull	8	20.0

NB: % is calculated from the total number of individuals with physical impairment (N=40).

Table 7.43- Distribution of the conditions or diseases encountered in the EAS sample.

Condition/disease	N	%
Trauma	15	37.5
Joint fixation (partial/full)	6	15.0
Tuberculosis	6	15.0
Paralysis	4	10.0
Non-specific PNB	6	15.0
Osteomyelitis	2	5.0
HOA	2	5.0
Leprosy	2	5.0
Neoplastic	1	2.5
Soft tissue formation	1	2.5
Unclear	1	2.5
Joint disease	0	0.0
Congenital	0	0.0
Scoliosis	0	0.0

NB: % is calculated from the total number of individuals with physical impairment (N=40).

Finally, the impacts of the physical impairments were considered with regards to visible deformity, functional restriction, and duration of impairment (Section 4.4). Of the 40 individuals with physical impairment 17 (42.5%) had visible deformities or differences, and 37 (92.5%) were functionally restricted in some way. A majority of the individuals (77.5%) had an acquired physical impairment that was medium to long term in duration (Figure 7.85). However, it should be noted that it is likely that many of the individuals classified as having medium to long-term impairments probably experienced physical impairment for a long time (e.g. BF-6 with bilateral posterior shoulder dislocation, SAH-481 with

leprosy, WP-39 with tuberculosis), but this could not be confirmed due to the nature of palaeopathological analysis.

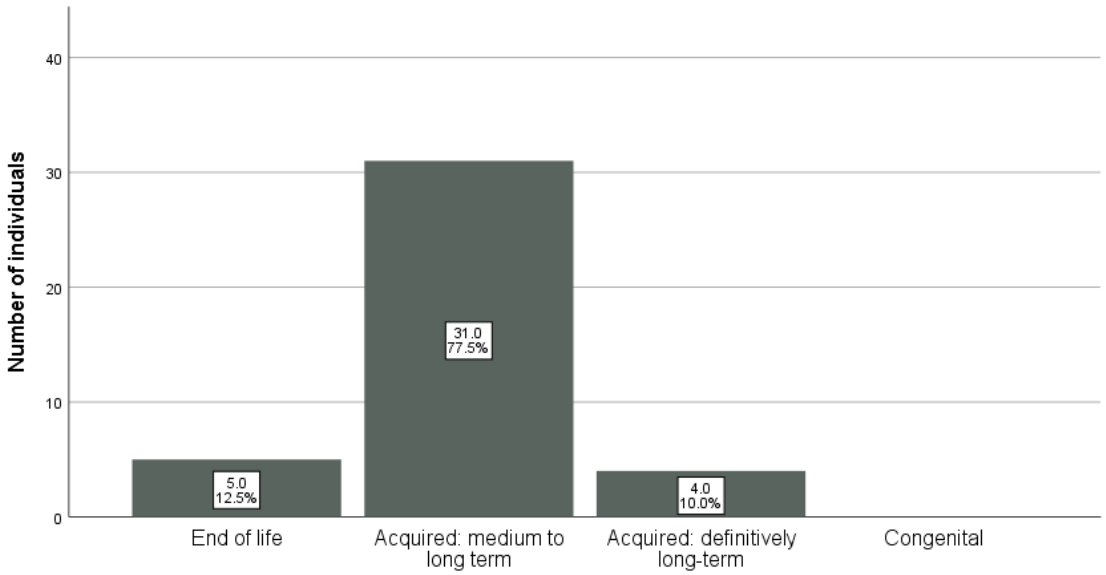

Figure 7.85- Distribution of physical impairment duration in the EAS period.

7.12 Summary of the funerary treatment of individuals with physical impairment in the EAS period

As demonstrated in the previous nine sections, funerary treatment of individuals with physical impairment in the EAS period was variable both within and between sites, and no ubiquitous efforts to very obviously distinguish a majority of the individuals with physical impairment through non-normative or deviant burial practices was observed (e.g. prone burial, burial in isolation, inclusion of large stones, decapitation) (Reynolds 2009). Nonetheless, many of the individuals with physical impairment did receive non-normative funerary treatment, although due to the extremely variable nature of EAS funerary treatment (Section 3.2), non-normative burial treatment was common among individuals without physical impairment as well. The funerary treatment of the individuals with physical impairment in the EAS cemeteries is summarised in Table 7.44, and is considered in the broader social and theoretical context of the EAS funerary sphere in Section 10.3.

Table 7.44- Summary of the types of funerary treatment for the individuals with physical impairment from the EAS period.

Ind. no.	Normative	Non-normative	Increased effort	Weapons burial	Jewellery burial	Near burial mound	Near communal space	Cluster	Marginality	Isolation
AD-7B	✓									
AD-39	✓									
AD-60		✓	✓							
AD-111		✓							✓	
AD-120		✓							✓	
AD-152	✓			✓						
AD-171		✓							✓	
BF-6		✓								✓
BF65		✓	✓	✓						
BF-75		✓							✓	
BF-134		✓			✓				✓	
EH-29		✓	✓		✓					
EH-42B		✓	✓		✓					
EH-130		✓								
EH-146	✓		✓	✓						
EH-322A	✓		✓	✓						
EH-440A		✓	✓		✓					
FS-94	✓		✓			✓			✓	
NEM-91		✓	✓							
SAH-111	✓			✓						
SAH-309	✓								✓	
SAH-346		✓?					✓			
SAH-481		✓								✓
SAH-744	✓									
SAH-1049	✓								✓	

Ind. no. (cont'd)	Normative	Non-normative	Increased effort	Weapons burial	Jewellery burial	Near/in burial mound	Near communal space	Cluster	Marginality	Isolation
WF-5	✓			✓						
WF-117		✓						✓	✓	
WF-312	✓				✓			✓	✓	
WF-318		✓		✓				✓	✓	
WMH-10										
WMH-18	✓		✓?							
WMH-54		✓	✓	✓		✓				
WMH-71	✓				✓					
WMH-75		✓	✓							
WMH-89	✓								✓	
WP-2		✓						✓		
WP-14	✓							✓		
WP-39	✓							✓		
WP-45	✓			✓				✓		
WP-73	✓									
TOTAL	**19**	**20**	**11 or 12**	**9**	**6**	**2**	**1**	**7**	**12**	**2**

7.12.1 Burial location

Burial location for the individuals with physical impairment varied widely within and between the EAS cemeteries. A majority of the individuals with physical impairment were buried firmly inside the main concentration of burials, but burial in marginal or somewhat marginal locations (i.e., *near* the edge of the cemetery) was also very common, and was observed in all but three cemeteries. One individual (FS-94) was buried directly adjacent to a burial mound, while another (SAH-346) was buried next to an area with a probable communal funerary function, two locations which may have increased the visibility of these two individuals during and after burial.

At Watchfield and Worthy Park, the clustering of individuals with physical impairment, non-adults, and contemporary multiple burials of females and non-adults was observed. Although a cluster was not observed at Finglesham (as only one individual with physical impairment was identified), FS-94 was buried in an area of the cemetery reserved for females and non-adults. Although it was not a very common mortuary treatment, the identification of clustering or association with females/non-adults in these three cemeteries, along with the EAS cemetery at Great Chesterford as previously published by Zakrzewski et al. (2017), suggests the possibility of a group identity in death related to impairment status and/or physical/social vulnerability (Section 10.3.1.1).

Burial of individuals with physical impairment in isolation (at a considerable distance from the margins of the cemetery) was very rare, and occurred in only two cemeteries (Butler's Field and St. Anne's Hill). The impairment types for the two individuals buried in isolation (BF-6: bilateral dislocation of the shoulders; SAH-481: leprosy) were very different, and therefore no conclusions can be drawn about whether a specific type of impairment dictated burial in isolation.

7.12.2 Body and limb positioning

As expected in EAS cemeteries, body orientation and positioning were extremely variable between and within sites, and between individuals with and without physical impairment. Although there was no standardised funerary treatment for the body orientation or positioning of the individuals with physical impairment, these individuals were more frequently buried in the right side or

prone orientations, and in the flexed or crouched, or “other” body positions (Table 7.45 and Table 7.46). Interestingly, similar patterns were apparent in the non-adults: they were more likely to be buried on the right/left side and in the flexed and crouched positions. Adult females were also more likely than adult males to be buried on the right/left side and in the flexed or crouched positions, but the differences were not as considerable as between the adults and non-adults (Table 7.45 and Table 7.46).

To allow for accurate statistical testing, the right/left side, prone, and “other” body orientations were classified as non-supine, and the flexed, crouched, and “other” body positions were classified as non-extended. Fisher’s exact tests, which are appropriate for 2 x 2 contingency tables including nominal data (Warner 2013), were performed utilising SPSS v. 25 to test the association between body orientation/position and impairment status, adult status, and sex (significance level $p<0.05$) (Table 7.47). Statistical testing was kept to a minimum to reduce the risk of false positive results. The results of all statistical tests are presented in the body of the thesis.

Table 7.45- EAS body orientation distribution comparisons between 1) individuals with and without physical impairment, 2) non-adults and adults, and 3) males and females.

	Physically impaired		Not physically impaired		Non-adult		Adult		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%
Supine	26	68.4	727	81.0	153	68.6	596	84.3	247	87.0	265	82.0
R side	6	15.8	79	8.8	35	15.7	49	6.9	19	6.7	24	7.4
L side	3	7.9	71	7.9	30	13.5	44	6.2	10	3.5	27	8.4
Prone	3	7.9	19	2.1	5	2.2	17	2.4	8	2.8	6	1.9
Other	0	0.0	1	0.1	0	0.0	1	0.1	0	0.0	1	0.3
Total	38	100.0	897	100.0	223	100.0	707	100.0	284	100.0	323	100.0

Table 7.46- EAS body position distribution comparisons between 1) individuals with and without physical impairment, 2) non-adults and adults, and 3) males and females.

	Physically impaired		Not physically impaired		Non-adult		Adult		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%
Extended	24	64.9	649	73.3	130	59.4	540	77.3	221	80.1	247	75.1
Flexed	9	24.3	177	20.0	68	31.1	117	16.7	41	14.9	59	17.9
Crouched	3	8.1	55	6.2	21	9.6	36	5.2	12	4.3	19	5.8
Other	1	2.7	5	0.6	0	0.0	6	0.9	2	0.7	4	1.2
Total	37	100.0	886	100.0	219	100.0	699	100.0	276	100.0	329	100.0

Table 7.47- Fisher's exact test p-values for the associations between physical impairment, adult status, sex and body orientation/position.

	Body orientation[1]	Body position[2]
Physical impairment[3]	**0.049**	0.174
Adult status[4]	**<0.001**	**<0.001**
Sex[5]	0.059	0.086

NB: **bold** type indicates p-value <0.05; [1]= supine vs. non-supine; [2]= extended vs. non-extended; [3]= physically impaired vs. not physically impaired; [4]= non-adult vs. adult; [5]= male vs. female.

Although body orientation and positioning among the individuals with physical impairment in the EAS period was variable, it was significantly more likely that they would be buried in a non-supine orientation. However, this calculation included the three non-adults with physical impairment, who, because they were non-adults, were significantly more likely to be buried in a non-supine orientation ($p<0.001$). When these individuals were removed, the association between physical impairment and body orientation in the adult EAS population became insignificant ($p=0.07$) (see Section 10.3.3 for further discussion).

Non-normative head and limb positioning was also noted in several individuals with physical impairment (e.g. the vertically projecting elbow in prone NEM-91, the pushed forward skull in BF-75, the contraction of one leg towards the body in EH-29 and SAH-481, the inwards bending of both legs in WP-2). In addition, EH-440A's skull was in a normative position, but was pillowed on the body of a neonate. While these types of non-normative head and limb positions may have been utilised to distinguish these individuals in death, it is important to note that because limb positioning *was* so variable in EAS cemeteries, non-normative limb positioning was not that unusual, and was certainly observed amongst the individuals without physical impairment as well.

7.12.3 Grave goods

As with burial location and body positioning, grave good assemblages included with the individuals with physical impairment were extremely variable. Equal percentages of individuals with and without physical impairments were buried with and without grave goods (Table 7.48).

Table 7.48- Grave good presence comparison between the individuals with and without physical impairment in the EAS period.

	Physically impaired		Not physically impaired	
	N	%	N	%
Grave goods present	27	67.5	821	67.5
Grave goods absent	13	32.5	395	32.5
Total	40	100.0	1216	100.0

A higher percentage of male individuals with physical impairment were buried with weapons than male individuals without physical impairment (Table 7.49). Although the association between physical impairment and weapons burial was not found to be statistically significant (p=0.253) using Fisher's exact test, it is notable that physical impairment did not preclude an individual from being buried with a weapon, an idea that was first introduced by Härke (1990). A smaller percentage of adult females with physical impairment were buried with jewellery than adult females without physical impairment, but this was found to be statistically insignificant (p=0.167) using Fisher's exact test.

Table 7.49- Weapons presence comparison between the male individuals with and without physical impairment in the EAS period.

	Physically impaired		Not physically impaired	
	N	%	N	%
Weapons present	9	47.4	122	37.8
Weapons absent	10	52.6	201	62.2
Total	19	100.0	323	100.0

Table 7.50- Jewellery presence comparison between the female individuals with and without physical impairment in the EAS period.

	Physically impaired		Not physically impaired	
	N	%	N	%
Jewellery present	4	30.8	170	48.4
Jewellery absent	9	69.2	181	51.6
Total	13	100.0	351	100.0

In summary, at all sites, physical impairment did not prevent burial with grave goods. No specific pattern between or within the sites could be detected; instead, individuals with physical impairment could be buried with weapons, with

jewellery, with other grave goods, or with no grave goods at all, just as observed in the remainder of the burial population.

7.12.4 Increased effort

Finally, burial treatment that could be considered indicative of increased effort on the part of those performing the burial (e.g. the provision of funerary treatment that required more time, effort, or material resources), was observed in association with individuals with physical impairment at six sites. Some individuals were buried with stone inclusions (e.g. AD-60, BF-65, WMH-18), in graves that were more than one standard deviation longer or wider than the site average (e.g. EH-146, EH-422A), careful body positioning (e.g. NEM-91), and burial in a ring-ditch under a barrow mound (e.g. WMH-54). Funerary treatment indicative of increased effort occurred in individuals without physical impairment as well, but it is noteworthy that living with a physical impairment did not preclude an individual from receiving funerary treatment that required more time, effort, or economic resources.

This chapter has summarised normative funerary treatment for each of the nine EAS sites analysed, presented descriptions and photographs of each of the individuals with physical impairment, and considered differential diagnoses and probable functional impacts for each individual. This chapter has also described the funerary treatment of each of the individuals with physical impairment and compared the general mortuary treatment of individuals with and without physical impairment. Interpretations of the burial treatment of most individuals with physical impairment are discussed in detail with appropriate reference to relevant literature, and the various factors that might affect how an individual is buried (age, gender, social/economic/political status, personal/mnemonic/symbolic value, religion, manner of death, social deviance, etc.) are considered. The next chapter will present the same palaeopathological analysis, funerary data, and interpretative analysis for the MAS period.